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EDITED BY
GREGORY STRAGNELL, M. D.

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The New Surgery*

HOWARD A. KELLY, M.D.
Baltimore, Md.

I speak from a considerable experience with several important but still novel additions to our surgical technic, namely, bipolar electrocoagulation and monopolar desiccation of William A. Clark and electric molecular disintegration by the cutting needle of George A. Wyeth. Clark calls the electric principles involved in his procedure by the established name, diathermy, while Wyeth seeks to emphasize the differences between these currents in their already well known medical and their more recent surgical uses by the term endothermy.

ACUSECTOR

Let us consider first the needle functioning as a knife and actually separating tissues as neatly and as readily as a scalpel. To avoid the to me objectionable name, radioknife, I call this instrument in my own clinic, an acusector (*acu,* with a needle; *seco,* I cut), or briefly, "sector." It consists of a light sterilizable fibre handle armed with a needle longer, shorter, or bent, according to the work to be done, in circuit with a sterilizable cord. This new fashioned scalpel is held delicately poised in the fingers like a pen and used as a sort of wand to divide the tissues which actually part before they are touched.

There must be no pressure whatever and no delay at any point as the tissues yield, a circumstance which at first presents a slight difficulty to one only accustomed to manipulating a scalpel. By slight regulations of the current, the operation proceeds more or less rapidly. For delicate dissections of nerves and vessels, as for example in high breast axillary work, the current is cut down to a minute gentle stream. In mass dissection, as in cutting through pedicles or removing larger amounts of disease, a heavier current is registered. In dividing the skin, it is desirable to use a current strength between the two to secure efficiency and yet not to penetrate more than a tenth of a millimeter laterally. Divided lymphatics are thus sealed and there is a notable diminution in capillary oozing. The dissection is far more beautiful and cleaner, more rapid and more satisfactory than any knife work, especially in separating intraabdominal adhesions. A delicate and difficult dissection advances by slow impulses or gentle strokes in regions where there is some uncertainty as to what lies immediately beyond. There is much less mopping and delay over capillary oozing, while larger vessels are often seen and clamped before they are divided and later coagulated and dropped or ligated if necessary. There is throughout less handling of the wound in this forceps and needle procedure, the operator in a sense having a curious gratifying consciousness of holding himself aloof from it. While by no means altogether rejecting the scalpel, I give the sector the leading place and decided preference in my daily work, relegating the scalpel to a subordinate position. It remains to be seen in the division of the skin whether the advantage lies with a skilful use of the sector or with the scalpel in the matter of subsequent primary union. The sector also has a remarkable field in conjunction with coagulation, under which heading I shall speak of it again.

The handle can be made, say, twenty-two cm. long for deep abdominal work. Twitching of any of the larger muscles touched can be lessened by cutting down the current or by grasping the muscle firmly with forceps before dividing. There is one real danger due to the fact that the division of the tissues ahead of the needle point proceeds in a manner so remarkable and so unexpected that one might easily sever peritoneum and contiguous bowel with one slight stroke. As the depth of the opening depends not on the force exerted by the hand wielding the sector but upon the current, there is no such dropping away of the underlying bowel as occurs with a cautious use of a scalpel. The dissection does not, therefore, proceed as we are accustomed to see it by easy stages and layer by layer, but simply dead ahead through every contiguous structure. It is most important also to remember this danger of any contact whatever while dissecting near large vessels such as the axillary, especially when the pectoralis is jerking. The interposition of a wooden spatula here will obviate trouble.

I think I have said enough to show that we have here a remarkably startling invention and innovation, for probably the last thing any one of us ever anticipated was that the time honored scalpel, badge of our office as surgeons as it were, would ever find a successful rival. How unsafe it is to prophesy!

*Read before the American Academy of Physiotherapy at the meeting held in Atlantic City, May 25 and 26, 1925.

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DESICCATION

Desiccation is a process of Clark's by which the high tension of a monopolar spark played at the end of a needle into the more or less superficial tissues dehydrates and reduces them to a dry even powdery condition in which they can be wiped or gently scraped away. The underlying area is sterilized by this procedure and can be kept so by suitable dressings until a rapid, almost scarless healing, has taken place. Any pain from the use of the current is obviated by local injections of a weak solution of novocaine. There is a large field for desiccation in the removal of moles, fibrous growths, other skin blemishes, and superficial epitheliomata, as well as in hemorrhoids. Desiccation is also invaluable in rapidly wiping out flat or slightly elevated papillary growths disseminated over the peritoneum. An important use is over the base of an area which has been bared by the sector, to stop hemorrhage and seal lymphatics. In a large sacculated hernia of the linea alba, I recently destroyed the whole peritoneal lining with desiccation and then closed the abdominal wall and secured primary union. I propose to extend this principle to inguinal and femoral and other hernias, destroying the sac *in situ* and leaving it there!

COAGULATION

Coagulation calls for the bipolar current also delivered at a needle point, and breaks down the cellular structure of the tissues and condenses them into a necrotic mass (Asnis). An average action extends readily 0.5 cm out into the tissues in all directions. We here enter a vast beneficent new field. The impression as the needle is inserted and the current turned on by one who uses it for the first time is that of a minute or of a heavy explosion of lightning within the tissues. Let us examine this somewhat carefully, taking as an illustrative case an epithelioma say half an inch in diameter on the face. By whatever method we elect to attack such a lesion, we calculate to deal with the entire area of obvious disease plus that circumjacent area or zone of the surrounding tissues we judge likely to be involved in the invisible extensions which in time reproduce the disease. For example, no sane surgeon will remove merely the obviously involved area, as repeated experiences have long since shown that a rapid recurrence is invariable. So whether we use a caustic paste, following my old friend and teacher in dermatology, Herman Duhring, or a scalpel, or electrocoagulation, or radium, we calculate to destroy or affect a wide zone of the surrounding tissues, operating more or less superficially according to the extent of the lesion and the known tendencies of the disease. Our successes and our failures, aside from the question of metastases, are wholly determined by this zone factor, and the penumbra, the doubtful region.

In the old fashioned bloody surgical operations commonly in vogue, I now begin to think with some repulsion of the messiness of the procedure, the sponging, the tying, the needling, and the general manipulations of the wound which must contribute to many bad results.

I therefore welcome this new method of coagulation as a great addendum to our technic, not only enabling us to do some things better, but greatly enlarging our field of beneficent activity.

Following Wyeth in many cases I would proceed as follows: Outline my field by circumscribing the suspected area by a rampart of coagulation, shutting off all lymphatics and destroying the tissues on the outermost periphery, a procedure which I think deserves the special term of "circumvallation." Then with the Wyeth sector the whole area is cut into like cheese and as a plaque is lifted up and off. Then the base is dealt with by a thorough desiccation.

ADVANTAGES OF THE METHOD

These great advantages gradually dawn upon us as we gain experience with these new methods:

1. There is no squeezing or manipulating the tissues, and no needling or insertion of ligatures.
2. The field is kept sterile or made sterile and can so continue through the healing process.
3. Healing generally takes place rapidly and without pain.
4. Granulations later may necessitate grafting.
5. If any part has been insufficiently treated, the first effort can be followed up at any subsequent time with ease and simplicity in this differing *toto celo* from our ordinary surgery.
6. I believe that in some cases it will actually be well to divide the operation up into a series in this way until all the disease is chased out of its terrain.

Bleeding vessels are caught with painstaking accuracy with fine pointed forceps (I prefer them slightly curved) and then sealed by touching the forceps with the current which is delivered with force at the point thus coagulating only a small area and occluding the vessel (Ward).

In some cases the whole concept of an operation differs from our present day bloody surgical methods. For example, in a disease of indeterminate extent about the face the surgeon commonly cuts rapidly around the area and then proceeds to remove all within the zone, while by our methods of sector and coagulation and desiccation we can proceed inward and onward, often removing tissue as we go and chasing the disease into the depths as far as it extends and where it is inaccessible to the scalpel. This is rendered possible by the constant control of the bleeding and by the comfort the operator finds in his work when he is not wasting time applying ligatures. Where larger vessels come into the field a preliminary ligation near the vessel trunk may be advisable.

Coagulation and the sector also render invaluable service where a failure with radium has left thickened devitalized tissues in contact with the disease.

I have used it with the best results in chronic cervicitis, also in destroying cervical cancer and cleaning out a deep pocket into which the radium was then inserted, securing a far better application.

Through an open air cystoscope made of hard rubber (not a necessity) I have coagulated, destroying completely, a large bladder tumor and have dealt easily with smaller disseminated growths. In vesicovaginal fistula the sector starts the operation delightfully by circumscribing the area over which the bladder is to be loosened from the vagina. This is often awkward with scalpel or scissors.

Eye surgeons are destined to find a large use for the desiccator in delicate work on mucosa and sclerotica, especially in dealing with early malignancy.

It is easy to see that these great new principles are destined to command an extensive readjustment of the surgical field, adding enormously to the satisfaction of the operator and the comfort of the patient; in a large percentage of our cases scalpel and ligature surgery, the old method, is destined soon to seem obsolete and crude when compared with the new which is neater, cleaner, and more effective.

Several other important advances I foresee at once. About a year ago I removed an epithelioma of the cutis of the penis two cm. in diameter with coagulation; I then cut down onto a large obviously cancerous gland in the left groin, punctured it with the needle, coagulated the whole interior, and sewed up the skin without removing it; the recovery was perfect and there has been no recurrence. This little step opens up a large vista in such fields as these:

Groups of cancerous glands in iliac fossa; glands on floor of pelvis in uterine cancer; glands deep down in fork of vessels in such cancer as ileocecal; glands in neck; glands in gastric cancer. It may even limit resection of stomach to pyloric region by destruction of the glands along the border in this way. I think also it is applicable to any single deep abdominal glands we occasionally meet which we would be glad to destroy.

In papilloma of peritoneum or disseminated malignancy, or in any localized malignant area which cannot well be removed on account of the condition of patient, or the site of the lesion, this maneuvre may be found to be effective.

A small malignant nodule on the intestinal wall I would destroy and then sew sound bowel over it.

SUMMARY

In conclusion, let me summarize: we have at our disposal a set of new agents destined to remodel our surgical technic over a large field.

1. The new electric methods are not simple substitutes or alternative methods of doing what we have done equally well by other procedures.

2. These methods are not to be learned completely in a week or a year. They call for careful attention to a new technic, for discriminating judgment in their application and for increasing boldness with a growing experience. The concept is a new one.

3. They will succeed often where surgery and radium have failed, although they do not exclude or wholly supplant either.

4. In operating by these new methods the motto might well be stated as "hands off," as there is so little fingering of the tissues.

5. Not least of the advantages of the new procedures are those of lessening hemorrhage, a more rapid disposal of diseased and infected tissues and a considerable shortening of the duration of the operation.

6. A larger percentage of the cases can be treated as ambulatory, after being treated under local or short gas anesthesias.

7. Pain owing to the destruction of the sensory nerves is lessened.

8. Healing is better.

If these allegations are true they fully justify the title "new surgery."

1406 Eutaw Place.

Electrocoagulation in Surgery*

WILLIAM D. McFEE, M.D.
Boston, Mass.

Electrosurgery now occupies a distinctive sphere in surgical work, inasmuch as it may be used with safety and brings satisfactory results in the treatment of many conditions heretofore dangerous and inaccessible by the employment of knife surgery. Very often the surgeon encounters pathological conditions which he hesitates or refuses to attack because of the liability of meeting with uncontrollable hemorrhage, either for the reason that the tissue itself is such that it will not retain ligatures or because sloughing subsequent to operation may extend to neighboring bloodvessels and troublesome secondary hemorrhage follow.

In the use of electrosurgery we have at our command an agent which is readily controlled and which, in the hands of one trained and experienced in its use, may be employed with entire safety. Electrosurgery comprises the use of electricity in its many forms for the destruction of tissue.

One effect of the contact of high frequency currents producing a certain degree of heat is the coagulation of bodily structure or tissue.

While interesting results from the use of other forms of electricity in destroying tissue have been noted, none of them has attracted so much general attention on the part of the medical profession as has the use of this modern high frequency electrical application in the treatment of many forms of skin lesions and growths of both malignant and non-malignant types.

The success achieved by surgical electrical procedures has also increased the interest in all forms of electrotherapeutics.

Surgical applications of electricity produce either a thermal or a chemical action on tissue, and their action is in no sense dependent on the temperament of the individual; this is in contradistinction to the medical use of electricity which is to a great extent influenced by individual reactions. Consequently in surgery we have a definite demonstration of what actually takes place, and this has been a leading factor in awakening the interest and attention of our profession to the possibilities of the use of electricity in its many forms for the treatment of various medical and surgical conditions.

The use of electrocoagulation to destroy growths by the heat action of the high frequency current is followed by very little sloughing of tissue, and

*Read before the American Academy of Physiotherapy at the meeting held in Atlantic City, May 25 and 26, 1925.

very little postoperative pain; it is attended with no blood loss, thus conserving the energy of the patient and giving to the operation the minimum of danger.

To practise surgery successfully with the high frequency current, one must first have a satisfactory equipment; there is a great deal of high frequency apparatus now in the market, good, bad and indifferent. In selecting the apparatus which he is to use one should make a thorough investigation and try to determine just what is best for the particular work which he intends to accomplish; too much reliance should not be placed on the statements of the manufacturer or the salesman whose chief object is to effect the sale of his goods.

For the purposes of electrosurgery an apparatus should be obtained which has a constant and consistent output of current, and which will produce the required quality of spark or contact heat effect. For all round purposes of electrosurgery one of the ordinary oil immersed transformers made by a reliable concern is to be preferred; of these there is the large type and the small, which is portable. Of the portable machines very few are reliable for heavy work, such as the treatment of large, thick growths.

The spark gap which regulates the quality and volume of the electrical discharge is a very important part of the apparatus; it has to be cleaned and adjusted from time to time, so that some attention should be paid to this in choosing an apparatus for our use.

Reference to the term electrocoagulation in this paper will mean the deep destruction or coagulation of tissue by the high frequency current in direct contact, by means of the active electrode connected with one terminal in conjunction with the indifferent electrode connected with the other terminal of the high frequency machine, and applied at any convenient part of the body situated opposite, or near, the part treated; this constitutes the bipolar high frequency application. This may be used for the removal of many forms of cancer which are external or accessible in cavities, also in treating deep-seated growths after they are exposed by means of the ordinary surgical procedure.

There is very little sloughing beyond the border of current contact, and scarcely any pain or other disagreeable reaction following the treatment; blood-vessels and lymph channels are immediately sealed so that there is no blood loss, and these possible entrances for the migration of diseased cells are thus effectively shut off and closed.

The best results in this work, particularly in those cases of inaccessible growths, will be obtained by the joint efforts of the surgeon skilled in the knowledge and use of knife surgery, and the surgeon having similar knowledge of and skilled in the surgical use and action of electricity. To know when to do and what to do under particular circumstances with either or both of these methods requires much painstaking study and observation and much practical experience. Many instances have been reported of absolute failures and many awkward situations have been encountered when surgeons, unaccustomed to and unacquainted with the action of electrical currents, have attempted to make use of them. It has been well said that "electricity is a good servant and a bad master."

Recently I was present when a sorry spectacle occurred in the amphitheatre of a large hospital in which a prominent surgeon, well skilled and proficient in his own line of work, undertook the destruction of a growth by electrocoagulation, using a volume and character of current which was in no way adapted to the condition he was treating, with the result that too much destruction took place; and the operator proceeded to condemn the apparatus used when, as a matter of fact, the real fault was his own lack of proper knowledge of the agent he was using.

Such unfortunate demonstrations bring discredit on this line of work which is as unwarranted as it is unnecessary, for the surgeon should either call to his assistance one who has special knowledge of the action and uses of electrical currents or should qualify himself in this field before attempting to enter it.

In the operation for the removal of cancer, the following technic has been successfully employed by the writer:

An active electrode, consisting of a surgical knife, fitted in an insulated handle, is used in contact with the tissue to be removed. A large indifferent metal electrode is applied to some opposing surface, the patient under general anesthesia. The current used is that delivered from a good high frequency apparatus of the D'Arsonval type which will deliver a high milliamperage and remain constant in action. The current is turned on by an assistant and gradually increased until coagulation appears, as shown by the cooking of the tissue. The knife, which is inserted just beyond and below the margin of the growth, is then gradually moved through the circumference with a rotary motion, the growth being lifted with the other hand by means of a suture imbedded in the structure or by forceps. As it becomes separated this is continued until the growth is entirely removed. If conditions and technic are right, no bleeding should result and a clean, seared surface is assured. Very little if any pain follows, and a superficial slough occurs.

The method of electrocoagulation is adapted to a great variety of lesions and growths in many parts of the body, and my interest has been particularly attracted to the good results obtained in the treatment of a number of cases similar to the following:

Case I.—J. S., aged eighty, was operated on by me for the removal of a papillary carcinoma, about the size and thickness of an English walnut, at the base of the tongue, according to the following technic: The patient was anesthetized with ether, the head being raised and the mouth propped open with a mouthgag placed in the opposite side of mouth; the tongue was held in position by a long suture passing through its centre; the cheek was divided by a lateral incision extending from the angle of the mouth to a point midway to the angle of the jaw, thus exposing the growth which was removed by cutting it away with a knife electrode according to the method of electrocoagulation previously described. There was no bleeding, as all vessels were immediately closed off by the heat

from the current as the operation proceeded. The surface left, after removal, was gone over by the desiccation spark and the line of demarcation was well beyond the diseased tissue. The absence of bleeding makes it much easier to visualize just what is taking place in the operative field, and we are thus able to perform our work with more definite accuracy. By this method we are also more sure of destroying malignant cells which may be at some distance beyond the growth, thus diminishing any tendency toward recurrence.

Case II.—R. W., aged fifty-five, was operated on by me two years ago for the removal of an extensive leucoplakia involving the cheek adjacent to the left lower jaw; this case had been previously treated by radium for one year with no result except that the disease was much aggravated, the patient suffering considerable pain after each application. The radium treatment in this case was given by a physician who was skilled in its use through many years' experience. The diseased tissue was removed by electrocoagulation; the indifferent metal electrode, size eight by ten inches, was placed under the shoulders and the surgical knife, in an insulated handle, was used as the active electrode; this was carried around the growth beyond its margin, the growth being gradually lifted from its bed as it was separated by the current contact. Sloughs covered all the coagulated area, which is usual, and these separated in about two weeks. During this time the patient was able to be about every day, had very little discomfort, required no narcotics, and had no blood loss during or after the operation. Up to the present time the area treated has held its full degree of improvement.

Although frequent reference has been made by many writers to the dangers of ether as an anesthetic where high frequency currents are used, I have as yet experienced no trouble in this respect although caution has been exercised, particularly in not allowing any spark to escape, by not breaking the contact of the electrode with the tissue until the current is shut off by the assistant.

In the use of electrocoagulation or surgical diathermy our aim is to produce under the active electrode an intense application of electrical heat so as to completely destroy the tissue operated on. In this operation the indifferent electrode is large, usually not less than eight by six inches, and placed on any portion of the body where good contact may be obtained. The active electrode which I prefer is one which resembles the ordinary surgical scalpel. The amount of current used will differ at all times, being subject to a difference in the resistance of the tissues themselves, and also varying in different types of apparatus used.

Malignant conditions involving the mucous membranes, as cancer of the tongue, leucoplakia, etc., usually respond very little if any to treatment by x rays or radium alone, but remarkable results are secured when electrocoagulation is used followed in some cases by ultraviolet radiation or x ray. In coagulating tissue which is close to bony structures care should be exercised not to coagulate deeply enough to destroy the periosteum, as it takes considerable time, even many months in some cases, for this to heal. The entire bone structure may be destroyed when necessary. Caution should also be exercised in all these treatments to see that the indifferent electrode closely approximates the skin surface; it should be held in place by a bandage preferably of elastic material, so that if the patient moves it is not so easily dislodged. Very severe burning may result from loose or improper electrical contact due to the arc formed in the air space between the electrode and skin; good electrical contact therefore must be maintained throughout the entire operation.

Electrocoagulation, if properly performed, should be followed by no surgical shock, no hemorrhage, and no loss of blood during or after the operation. In treating growths in the mouth, sometimes our coagulation will not go beyond the point of actual contact, and it is well to watch these cases during the sloughing process so as to guard against possible bleeding when the slough begins to separate; this, however, will very seldom occur. While the operation of electrocoagulation is going on, if any bleeding should occur, it may be immediately controlled by applying the active electrode to its source.

While the foot switch may be used by the operator to turn the current on and off, it has the disadvantage of dividing his attention between his hands and feet; also, when using the foot switch, the current strength cannot be regulated, so that for the ordinary purposes of any electrocoagulation operation the aid of a good assistant, stationed at the apparatus, who can quickly change the control switch of the transformer so that it will deliver a greater or less amount of current, changing at once when signalled by the operator, gives the most satisfactory results.

The operator may disregard any meter reading when using electrical currents to coagulate, as his best guide is his observation of the changes taking place, or in other words, the reaction in the destroyed tissue. The amount and character of current used, together with the time of its application, must depend largely on his knowledge gained from previous experience.

A high frequency apparatus having a set of radio tubes in circuit will produce a current giving a constant and steady intense heat effect which will quickly cut its way through the tissues, using an ordinary needle for the active electrode; but according to my understanding, this method when used alone is not dependable for producing the desired extent of coagulation without getting too much destructive action at the point of contact; in other words, unless the active needle electrode is kept moving the tissues will be charred and this may be followed by more extensive sloughing.

It is rather deplorable that such a term as radio-knife is used, since the action of the current referred to in this application is due to the radio tubes used in the circuit, producing what is called the undamped wave, thus maintaining a constant heat effect which is in no way dependent on the terminal applicator or electrode used. In all of our work we should make use only of language and expressions or terms which convey definite information or meaning.

The dissection of the growth by using the high

frequency current with the spark gap in circuit and the surgical knife for the active electrode will certainly produce some most interesting results.

I believe this work has a wonderful future field of usefulness, as it will no doubt be given increased attention by those in our profession who are qualified to develop its many important qualities.

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Digestive Symptoms Caused by Disease of the Abdominal Vessels

*With Special Reference to Arteriosclerosis**

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The frequency of gastrointestinal symptoms resulting from general arteriosclerosis and those occurring in the course of localized cerebral or thoracic arteriosclerosis, is well known. Although marked arteriosclerosis of the abdominal vessels either as a part of general arteriosclerosis or localized to the abdominal vessels only is not infrequent, its clinical significance has not been sufficiently appreciated.

Physiologically, the distribution of blood throughout the body undergoes variations depending on the amount of blood the functioning organ needs. If the organ performs a maximum amount of work, the blood supplied to that particular organ is far greater than to the rest of the body. E. Weber showed that a muscle when performing its maximum amount of work might receive seven times the quantity of blood it contained during rest. It is also known that two thirds of the total quantity of blood may be held by the vessels of the skin. The vessels in the lower abdomen, known as the largest blood reservoir in the human body, may contain an unusual quantity of blood at the expense of other parts of the body.

The distribution of the blood in the body is automatically regulated by the splanchnic nerves. Stimulation of the splanchnic nerves increases the vascular tone, causing contraction of the small arteries and the arterioles. Paralysis of the splanchnic nerves causes marked dilatation of the bloodvessels. The vasomotor changes influencing the smallest vessels determine to a large extent the distribution of the blood supply to the organs proper. These vasomotor changes are brought about to a considerable degree by rhythmic contractions in the capillaries (Krogh, Hooker and Danzer, E. P. Boas, and others). The splanchnic bloodvessels in the lower abdomen play an important rôle in the distribution of blood to the abdominal organs.

The coordinate work of the nerves and the flow of the blood through the bloodvessels may be interfered with by innervation disturbances or by organic changes in the vessels. Where the proper blood supply to an organ is interfered with on account of innervation disturbances in the bloodvessels, the condition may be termed angioneurosis; interference with the proper functioning of the bloodvessels on account of organic changes may be termed angiosclerosis (Walko). It is apparent that at times, especially during middle life, it is quite impossible to differentiate clinically whether we are dealing with a purely functional disorder of the bloodvessels (angioneurosis) or an organic disorder (angiosclerosis). Huchard, in order to avoid confusion, designates even the functional disorders of the bloodvessels as presclerosis. The term presclerosis is not appropriate from the clinical point of view, because it expresses merely a speculative possibility. Pathologically, the term presclerosis is justifiable.

In order to understand the symptom complex caused by arterial disease, it is important to dwell somewhat in detail on the pathology of arteriosclerosis and to a certain degree on its pathogenesis.

The epoch making work of Jores on arteriosclerosis is today almost universally accepted with some modifications by the most recent workers, such as L. Aschoff, A. Aschoff and the former's pupils (Hueck and Faber), MacCallum of this country, and by Evans and Adami of England.

It is known that the changes in the different vessels in general arteriosclerosis are not uniform. In the intima of the aorta and the other large vessels of the elastic type, there exists during embryonic life an elastic muscular layer. In the course of life two more layers develop, the first being the result of the formation of a new elastic layer arranged in lamellæ and originating from the lamina elastica interna and known as the hyperplastic layer. On the inner aspect of this layer there is another layer from which it is separated with difficulty. This inner layer consists almost exclusively of connective tissue and contains elastic fibres not in the form of lamellæ. This layer of connective tissue may be diffuse or be present only in small areas; in the latter case it is designated as sclerotic plaques. According to Jores this connective tissue layer is preceded in its formation by fatty degeneration in the elastic, muscular and hyperplastic layers and is therefore of a reparative nature.

According to L. Aschoff the fatty changes do not affect the elastic tissue but the cement substance of the vessels and are not necessarily of a degenerative nature, but the result of infiltration of cholesterol carried to the vessels with the blood plasma. Degenerative changes need not precede the formation of connective tissue. Accordingly, the fatty changes, as evidenced by excess of lipoids, replace the elastic fibres without the formation of connective tissue, or connective tissue formation may be present without being preceded by fatty degeneration. During the ascent of life, and even before puberty, such fatty changes are encountered in the vessels of the elastic type which may retrogress. These changes depend entirely, according to Aschoff, on the excess of cholesterol in the blood and are therefore of a metabolic nature. Such changes were not encoun-

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tered during the World War because of the scarcity of fat in the diet. It may be mentioned here that the marked increase of the cholesterol content of the blood causes deposition of the cholesterol in the wall of the bloodvessels bringing about spastic contraction of the vessels with increase in arterial pressure, thus indirectly leading to atherosclerotic changes. This was experimentally demonstrated by a great number of authors and recently again by K. Westphal. The lipoid changes in the bloodvessels are termed by Aschoff, atheroma. In the media of the vessels of the elastic type, there are mainly degenerative changes which consist mostly of lime deposits. Hyperplastic changes in the media of this type of vessels have thus far not been demonstrated during the early stage of arterial disease, nor have any such changes been seen in the adventitia.

In the large arteries of the muscular type, especially the large vessels of the extremities (femoral, tibial) and of the abdomen (celiac, superior and inferior mesenteric), the changes in the intima equal those encountered in the vessels of the elastic type, but here the changes in the media are much more pronounced. This was first demonstrated in the long vessels of the extremities by Virchow and by Monckeberg. They showed that in these vessels the calcification in the media far exceeded the changes in the intima. Other observers found the same changes in the muscular type of bloodvessels in the different organs of the abdomen. Kummel found them in the mesenteric and intestinal vessels; Schmiedel, as well as Staemmler, found these changes in the splenic and renal vessels.

The media in the muscular type of the smaller arteries and arterioles may be the seat of extensive fibrosis without any involvement of the intima. This is the well known arteriocapillary fibrosis of Gull-Sutton. In the arterioles the degenerative process usually predominates in the form of hyaline changes which are mostly confined to the intima and later spread to the media. The changes in the smaller vessels may be generalized, but in a large number of cases they are confined to one or the other organ. This explains why in some cases the symptoms are most outspoken in certain organs.

To recapitulate, the anatomical changes of arteriosclerosis are made up of two distinct processes, the hyperplastic and the degenerative. Both are to a certain extent dependent upon each other. As a rule both the intima and the media show changes, the degree of which may vary, at one time predominating in one layer and at another time in another layer. The changes in both layers are part of the same disease which we call arteriosclerosis and which Marchand terms atherosclerosis. E. Kaufman states that atherosclerosis must be differentiated from arteriosclerosis. Soft and mushy changes predominate in atherosclerosis, whereas, in arteriosclerosis, the calcified and fibrous tissue changes predominate. In the same artery both conditions may be present. The changes, either atherosclerotic or arteriosclerotic, determine the pathological consequences. Where softening predominates, aneurysmal formation, rupture, or dislodgment of emboli may result. If calcified and fibrous changes predominate, thrombosis frequently results. According to Huchard the senile vascular changes are atherosclerotic. In such an individual, while presenting symptoms of arteriosclerosis, the blood pressure remains low. In view of the fact that in all sclerotic vessels there are also fatty changes, L. Aschoff favors the term atherosclerosis.

In cases of simple hypertonia (essential hyperpiesis of Allbutt) the hyperplastic element predominates, which means there is a quantitative increase of elastic and muscular tissue of the bloodvessels, but qualitatively it is of the same good structure as the normal tissue. If the degenerative changes are demonstrable in connection with hyperplastic changes it may then be designated as true arteriosclerosis.

Although pathological studies have sufficiently demonstrated how frequently the vessels in the abdomen, especially those of the gastrointestinal tract, are affected by arteriosclerosis, the significance of this fact has not been sufficiently appreciated at the bedside. Virchow as well as Rokitansky have already called attention to that fact. Of the later pathological studies on arteriosclerosis of the gastric vessels the most valuable contribution is that of W. W. Hamburger, of Chicago, who worked in 1908 in Oestreich's Pathological Institute in the Augusta Hospital in Berlin. His studies comprised ten autopsies, five men and five women. Six patients were under forty-three years of age, the youngest being twenty-two. Two between the ages of fifty and sixty showed no sclerotic changes, and the other two showed very mild changes. Of the six cases in which the bloodvessels of the stomach showed extensive arteriosclerotic changes, Hamburger found those of the lesser curvature most frequently affected. The larger vessels of the submucous layer of the stomach were more frequently affected than the smaller ones. Hamburger's studies show that arteriosclerosis of the gastrointestinal tract may occur very early in life. Huchard, many years before, called attention to the same fact.

The factors bringing about arteriosclerosis may be indirect and direct. The indirect causes are chiefly the result of excessive functional demands on the bloodvessels. During the ascending period in life, the blood pressure and the tension in the arteries bring about an increase in the tone of the vascular wall, causing hypertrophy by an increase in elastic tissue (hyperplasia). During the descending period of life, the response of the vessels to the excessive demand cannot take place any longer by hyperplastic changes alone but by combined degenerative and hyperplastic changes. In some individuals this occurs earlier in life, in others later. That mechanical factors can cause arteriosclerosis is well demonstrated on autopsy material which often shows how general and local increase in blood pressure may cause early arteriosclerosis, as, for example, the arteriosclerosis of the pulmonary artery in case of congenital communication between the pulmonary artery and the aorta, in mitral stenosis, in chronic emphysema of the lungs, or extreme arteriosclerosis of the ascending aorta in stenosis of the isthmus of the aorta.

Increase of blood pressure in all the arteries in the body leads to general arteriosclerosis, as is well illustrated in secondary contracted kidney. Everyone, Romberg says aptly, gets his arteriosclerosis where the increased pressure changes are most marked.

The fact that the arteriosclerotic changes may be more marked in certain parts of the body than in others is well known.

As to the direct causes of increase in blood pressure the vasomotor apparatus undoubtedly plays a very important rôle. Physiologists and clinicians have for a long time appreciated the important part played by the vasomotor system in controlling the tonicity of the vessels and regulating the blood supply to the organs. It is only recently that the pathologists in interpreting the pathogenesis of arteriosclerosis and the causation of the symptoms, began to realize the importance of vasomotor influences in the causation of arteriosclerosis.

L. Aschoff in his latest excellent contribution on the subject states, "the mechanical overexertion of the vascular system brought about by infections or toxins is responsible for the irritation of the nerves supplying the bloodvessels and is the greatest factor in the pathogenesis of arteriosclerosis, because the nerves govern all these factors which etiologically come into consideration in the production of this disease."

The questions arise, why do some have a more irritable vasomotor system than others; why are the vessels in some more prone to arteriosclerotic changes, and why are some groups of bloodvessels in the body more affected than others? In answering these questions, a number of factors must be taken into consideration. In the first place, the status of the individual plays a most important rôle. It is well known that some persons are born with inferior vascular and nervous systems. The type known as the status thymicolymphaticus has usually a small heart and narrow vessels, in addition to enlarged thymus and enlarged lymph glands. This type of individual is, as a rule, less adapted to the demands the stress and strain of life puts upon him. During the first and part of the second decade of life he may be subject to skin manifestations in the form of eczema, urticaria and to frequent infections. Towards the latter part of the second decade and part of the third, circulatory disturbances may be present, such as cardiac palpitation, dyspnea on slight exertion and cold extremities. Idiopathic hypertrophy of the left ventricle, as described by Neusser, Osler and E. D. Friedman, is not infrequently present during that time.

Towards the end of the third decade the gastrointestinal symptoms manifest themselves, all of which are the result of vascular instability due to hypersensitiveness of the vasomotor system. The instability of the vasomotor system causes, in a great majority of cases, constriction of the affected bloodvessels, and if it affects large areas of the splanchnic system, the increase in blood pressure even during an early age may be considerable. In other cases vasodilatation is the predominating factor and the blood pressure is low. Wiesel separates status thymicus from status lymphaticus. The status thymicus is characterized by hypoplasia of all the organs, including heart and bloodvessels with predominating vagotonia. The vagotonia is responsible for vasoconstriction causing an increase in blood pressure. The vasoconstriction in some areas of the gastrointestinal organs may be so pronounced as to obliterate the small vessels and cause local ulceration. This has been proved pathologically by the studies of Roessle and clinically by the studies of von Bergman and his pupils in the causation of ulcer of the stomach.

The status lymphaticus type is also characterized by hypoplasia of the organs and enlargement of the glands, but there is predominating vasomotor dilatation with resulting low blood pressure. Bartel's status hypoplasticus type is characterized by narrow vessels without enlargement of the thymus or lymphatic glands. These individuals also have a tendency to spastic contraction of the bloodvessels which eventually leads to arteriosclerotic changes.

The influences which bring about hypersensitiveness of the vasomotor apparatus are manifold, such as chronic infection (syphilis), focal infection (diseased tonsils, teeth), intoxications (lead, nicotine, alcohol), metabolic disturbances (diabetes and gout), psychical trauma, internal secretion disturbances especially that of the suprarenals, or instability in the vegetative nervous system caused by internal secretion disturbances, or by changes in the electrolytes (kalium and calcium) as shown by the studies of F Kraus, S. G. Zondek and their coworkers. The influence of calcium ion on the constriction of the bloodvessels was conclusively demonstrated by Leites in the Physiological Laboratory of Pawlow. Leites transfused an animal with Ringer's solution without the calcium ion to which he added one c. c. of 1 to 1,000,000 or 1 to 10,000,000 of adrenalin solution and no narrowing of the bloodvessels resulted. If he added to this solution the normal quantity of calcium contained in the Ringer's solution, spastic contraction of the bloodvessels took place.

The importance of diabetes in the causation of vascular changes is illustrated by the frequent association in diabetes of thromboangiitis obliterans (Buerger's disease), gangrene, coronary spasm and coronary thrombosis. It must be remembered that affections of the smallest arteries and arterioles of the pancreas often associated with general arteriosclerosis may late in life cause diabetes as a result of degeneration of the islands of Langerhans.

The causative relation of the suprarenals to the vasomotor apparatus has been studied by Wiesel, Hedinger and others in reference to essential hypertension and to arteriosclerosis. There is no doubt that the suprarenals play an important rôle in certain cases of arteriosclerosis.

An important contribution regarding the influence of the vasomotor system on the bloodvessels was made by Staemmler. He showed that in some parts of the nervous system the sympathetic ganglia were the seat of chronic inflammatory changes. These were found mainly in elderly individuals and at times also in young persons. The inflammation of the ganglia preceded the arteriosclerosis and was not the cause of it as proved by the fact that in some cases inflammation of the ganglia was marked, although the vascular changes were insignificant. Staemmler states that inflammation of the ganglia may interfere with the peripheral vasomotor nerves and cause disturbances in the organs supplied by the vessels controlled by these nerves. It causes vasoconstriction and if such constriction persists it leads to arteriosclerotic changes and permanent increase in blood pressure. The inflammation of the sympathetic ganglia may be caused in turn by chronic in-

fections and intoxications. The vascular abdominal crisis of Pal, angina pectoris vasomotorica and angina abdominalis vasomotorica may thus be explained. In those cases of angina pectoris, endarteritis obliterans, or even in thromboangiitis obliterans where sympathectomy or cutting of the sympathetic ganglion has a favorable influence, it is likely that inflammation of the sympathetic ganglia may be the primary cause. Since the operation of excising the sympathetic ganglion for the relief of certain forms of angina pectoris is beginning to be in vogue, it is hoped that the pathological studies of the excised ganglia will determine whether the findings of Staemmler can be corroborated and possibly furnish definite indications for proper operative intervention.

Perez is of the opinion that spasmophilia plays an important rôle in causing vasoconstriction of the bloodvessels. Fleisher and Perez in their clinical studies showed that in this type of person ulcer of the stomach may develop as a result of persistent spasticity of the bloodvessels in the gastric mucosa.

From the above, it may be concluded that the activity of the vasomotor system is greatly responsible for the increased vascular tone; this in turn is caused by excessive functional demands made on the vascular system. The organs in the body most affected by the changes in the vascular system give rise to symptoms. At first, disturbances in the bloodvessels may be only of a functional nature (angioneurosis); later the changes in the vessels become permanent (angiosclerosis). During the angioneurotic stage the symptoms are mainly caused by psychical influences, whereas during the angiosclerotic stage the increased functional demand on the organs supplied by the affected vessels may bring about symptoms even in the absence of psychical influences.

The type of individual in whom the arterial changes are caused chiefly by the instability of the vasomotor system, is thin, tall, physically under developed with hypoplasia of all the organs including the vascular system and shows some or all of the manifestations of infantilism. There is marked epigastric pulsation and no pulsation can be detected in the suprasternal notch on account of narrowing of the aorta.

In contradistinction to the underdeveloped type just described, there is another type in whom the angiosclerotic changes are not as a rule preceded by angioneurosis. This type is the status apoplecticus. Arteriosclerosis in these cases is usually generalized with a tendency to predominate in the splanchnic vessels, especially if the individual is afflicted with plethora abdominalis.

By plethora abdominalis a condition is understood where there is persistent overfilling of the blood in the bloodvessels of the lower abdomen. This condition is encountered in the obese individuals who lead a sedentary life. It is a hereditary and constitutional anomaly in the majority of cases. In some cases it may be acquired by a sedentary mode of living and by overeating.

In the hypoplastic type referred to above the functional overwork of the bloodvessels causes spasticity and the resulting symptoms are due to local ischemia. In the type afflicted with plethora abdominalis the functional abuse of the bloodvessels is brought about by the fact that they are overfilled with blood which causes congestion of the organs they supply, thus leading to passive hyperemia at first, and later to active hyperemia and chronic changes in the organs proper. Enlargement of the liver and even spleen and heart are early manifestations. With the increase of local circulatory disturbances in the abdominal vessels there is an increase in the resistance in the splanchnic system as well as increased resistance in the smaller vessels and marked elevation in blood pressure.

In either type of subject, arteriosclerotic changes in the bloodvessels are not of the same character and severity throughout the entire body. In the smaller arteries of the gastrointestinal tract fibrosis may predominate; in other vessels calcification and ulceration are most marked. Sclerosis of the bloodvessels of the gastric mucosa, as shown by Hardt and verified by other pathologists, may play an important rôle in the causation of ulcer of the stomach and duodenum. Degenerative changes in the bloodvessels may cause aneurysmal formation, with subsequent rupture, or may lead to thrombosis. The same pathological changes are also encountered in the bloodvessels of the intestines, pancreas, spleen and liver.

It is understood that arteriosclerotic changes of all degrees of severity are not necessarily confined to certain types of persons. Harlow Brooks rightfully states that, due to stress and strain of our modern civilization, arteriosclerosis is the most frequent disease during middle life even in persons of normal status.

SYMPTOMS

In the hypoplastic type, in whom vasomotor instability is a causative factor, the gastrointestinal symptoms may be marked even during the angioneurotic stage. The symptoms, however, are vague and transient in nature, not characteristic enough to establish a diagnosis. The usual complaints are, fullness in the epigastrium soon after meals, nausea, capricious appetite, and at times aversion to food for weeks leading to considerable emaciation. The blood pressure may reach 140 and even 160, and sometimes rise as high as 180, due to nervous excitement. The blood pressure usually drops 20 or 30 mm. Hg. and more as the patient calms down in the course of examination. The blood pressure rises considerably after the subcutaneous injection of 0.5 to 1 c. c. of adrenalin (1 to 1,000) and may persist for two or three hours, gradually coming down to normal. That vasoconstriction may cause a lasting elevation in blood pressure can be demonstrated in the following way: If three of the extremities are bandaged tightly so as to obliterate the arterial pulse and the blood pressure is taken in the unbandaged extremity, an increase of 50 or 60 mm. Hg. is found, whereas in normal individuals the blood pressure under the same conditions is only increased about 5 or 10 mm. Hg. Localized repeated vasoconstriction of the gastric vessels, especially those supplying the submucosa, may lead to gastric erosion and even to ulcer formation with its attendant clinical symptoms.

The gastrointestinal symptoms in the plethoric individual are only present during the stage of angiosclerosis of the abdominal vessels and depend upon the degree of changes in these vessels and in the organs most affected.

If the arteriosclerosis involves mainly the abdominal aorta, it only causes distress in the epigastrium, annoyance as the result of continuous pulsation, and pressure tenderness over the abdominal aorta and slightly to the left of it. The pulsation over the abdominal aorta extends backward and to the left of the lumbar vertebra. There is also increased vascular tension in the arteries of the lower extremities as compared to those of the upper. The thickened abdominal aorta can be palpated in thin people. Ortner and Litten pointed out that there is a systolic murmur audible over the aorta in these cases, even if no pressure with the stethoscope is exerted; if pressure with the stethoscope is exerted, such systolic murmur is heard in a great many normal individuals. If the sclerosis of the abdominal aorta is due to syphilis, pain in the epigastric region is a marked symptom. The pain radiates to both sides of the abdomen and usually disappears when the patient lies down or even when he sits down. Aneurysm of the abdominal aorta is rare, but if present it gives rise to a great deal of pain, colicky in character, which appears periodically. The pain is confined mostly to the right of the abdomen. There is also a great deal of burning in the upper abdomen radiating to the lumbar region. Not infrequently, the pain is neuralgic in character, and the burning and tearing nature of the pain may persist day and night. The pain may come on at any time of day or night and lasts from ten to fifteen minutes and sometimes continue for an hour or two. At times it comes on one to two hours after meals and simulates gastric or duodenal ulcer. In these conditions food which causes distention of the stomach aggravates the pain.

At times the sclerosis causes narrowing of the abdominal aorta and its branches giving rise to diffuse generalized abdominal pain and pulsations throughout the entire abdomen. A loud blowing systolic murmur is heard in these cases over all the vessels of the abdomen. The vessels can be palpated, feel cordlike, and are tender to pressure. Meteorism is quite marked and according to Adolph Schmidt and his pupil, Kato, it is due to the failure of the intestinal tract to absorb the gases. The symptoms are usually attributed to some other gastrointestinal disease. The intake of food is cut down to a minimum by the patient, on account of the distress after eating, thus resulting in considerable emaciation and secondary anemia which arouse suspicions of malignancy, strengthened by the fact that the individual affected is usually of middle age, with a low or no gastric acidity. It is a well known clinical fact that as long as the arteriosclerotic symptoms are not confined to the digestive organs, the patient does not as a rule lose weight and usually appears perfectly healthy; in other words, if cerebral or thoracic symptoms predominate the patient's state of nutrition does not suffer.

If the sclerotic changes are most marked in the vessels of the gastric mucosa, localized trophic changes result causing distressing gastric symptoms. In these cases there is persistent pressure and pain in the upper abdomen independent of meals but aggravated by food. Nausea and loss of appetite are very marked and may lead to loss of weight. In cases of aneurysmal formation with subsequent rupture, severe uncontrollable gastric hemorrhages may occur. This is, however, rare. Rupture of arteriosclerotic vessels in the intestines causing intestinal hemorrhage is more common. According to G. Singer, intestinal hemorrhage due to intestinal atherosclerosis is characterized by the fact that it recurs very frequently and that the patients recuperate very rapidly. This is an important differential diagnostic sign from gastrointestinal bleeding due to cancer, varices from the esophagus or the stomach in the course of cirrhosis of the liver and gastric hemorrhages caused by thrombophlebitis in the splenic and hepatic vessels.

Arteriosclerosis of the abdominal vessels may give rise to periodic attacks of pain in the upper abdomen radiating to both sides and lumbar region accompanied by collapse and abdominal distention—the so-called angina abdominalis (Bacelli), angina epigastrica (Huchard) or angina subdiaphragmatica (Ortner).

(To be concluded)

Asthma with Pneumothorax

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Cases of asthma with pulmonary tuberculosis are not frequently observed. In examining charts of more than four hundred asthma patients, I found only four with pulmonary tuberculosis; of these four the sputum was positive in only two. Still more infrequent are cases of asthma with pneumothorax. This condition was discovered in the following case:

Case.—A. B., aged eleven, applied for treatment in June, 1923. Her previous history disclosed that she had had measles, whooping cough and pneumonia but at no time did she suffer from the symptoms which are usually associated with the onset of pneumothorax, such as sudden pain in the chest and abdomen, perspiration or faintness. Nor did close questioning reveal any loss of weight, daily elevation of temperature or night sweats. The asthma appeared for the first time following the attack of whooping cough when she was two years old. The paroxysms increased steadily in severity and frequency until she suffered from almost continuous asthma with cough and expectoration, which occurred mostly at night in her own home. It was further noted by the patient herself that any diet, which included some form of meat, would provoke an attack.

Examination showed her to be a well developed little girl, somewhat obese, and normal in all respects as to her eyes, nose, teeth, throat, heart and glands. The Von Pirquet test as well as urine and

sputum examinations were negative. Her lungs, however, showed sonorous and sibilant râles, and large rhonchi all over. The breath sounds were loud and could be heard at a distance, except in the upper lobe of the left lung. In addition to this there were other symptoms which indicated the presence of a cavity in the upper lobe of the left lung. On percussion a tympanitic sound could be heard posteriorly, and when percussion was done with a metallic object on a coin, placed over the left scapula, a metallic click could be heard with the stethoscope held a little below the left clavicle. An x ray examination on

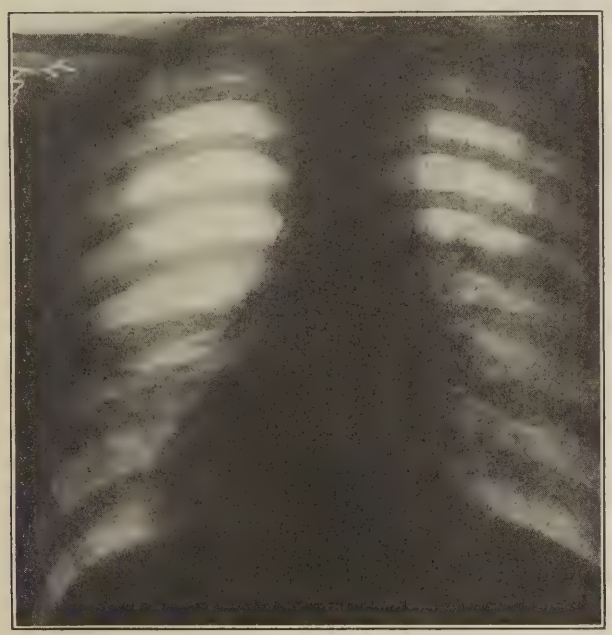

FIG. 1.—X ray examination made on October 18, 1923, showing a cavity of pneumothorax in left lung.

October 18, 1923, by Dr. Byron C. Darling, revealed in the right lung peribronchial thickening and fibrosis reaching well toward the periphery (Fig. 1). The left lung showed that the upper third was taken up by a large cavity of pneumothorax. The lower third of the lung showed aerated lung tissue with peribronchial thickening and fibrosis to a moderate degree.

She was tested with all the proteins and found sensitive to dust, horse dander, rabbit and goat hair, and beef. An investigation of her home disclosed that her bedding was stuffed with rabbit hair and goat hair. After a thorough cleaning of the house, silk floss was substituted for hair in the bedding and instructions were given to omit meat from her diet.

In July, 1923, treatment was begun with extracts of house dust and rabbit epithelium. Injections were given once a week and it was noted that her attacks became less frequent with intervening periods of several days of comparative freedom. After a few weeks, the attacks would occur on week ends only. Further investigation revealed that her meals during these periods contained considerable quantities of meat. Rigid instructions were again given to eliminate meat from her diet entirely, and with the patient's cooperation she has since been almost completely free from attacks.

Observation and treatment were continued all through 1923 and 1924. From June, 1923, until January, 1924, she had eight attacks, each one following as a result of her disobedience of instructions as to diet. During 1924 she had seven attacks of a mild character but she was at no time so distressed as to prevent her regular attendance at school. In the last five months she had had no attacks.

Frequent physical examinations were made and while the general condition of the patient showed marked improvement, still the cavity in her left lung persisted. The other physical signs, such as râles and rhonchi, were slowly disappearing and at times could not be heard at all. On January 15, 1925, x ray examinations were again made by Dr. Darling and Dr. Herman Mond and the findings indicated that the condition of her right lung was practically unchanged, there still being peribronchial thickening and fibrosis. The left lung showed throughout the upper two thirds, a cavity of pneumothorax with a clearly defined sac wall which was even larger than it had been sixteen months before (Fig. 2).

A physical examination at this time showed her to be generally much improved. The cough and expectoration ceased. She was much brighter and happier than at any time previously. Her lungs showed clear respiratory sounds and no wheezing râles could be detected. The breath sounds in the upper left lung were faintly audible.

COMMENT

From the history and the x ray findings in this case it can be safely concluded that the pneumothorax which gradually pushed the left lung downwards was not sudden in onset but that it developed rather slowly because of the rupture of alveoli produced by the strenuous coughing during the many years of continuous asthma.

The gradual development of the pneumothorax

FIG. 2.—X ray examination made on January 15, 1925, showing increase in size of pneumothorax.

will also explain the increase in the size of the sac as shown in the second picture of January 15, 1925.

From a general consideration of this case, it may be safe to assume that an early recognition of the allergic character of the disease might have prevented the pneumothorax in her left lung.

Clinical and Roentgen Considerations of Duodenal Ulcer

Including Some Newer Phases of Roentgen Interpretation

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New York

ETIOLOGY

The pathogenesis of duodenal ulcer, as of all forms of peptic ulcer, still forms a chapter of speculative medicine. Rosenau's theory of infection as the primary etiological factor in the production of ulcer does not fully tally with experimental data. Infectious ulcers produced from bacterial strains derived from the bases of old ulcers are not analogous to the simple round peptic ulcer, but are multiple, hemorrhagic, sloughing ulcerations with a good deal of acute inflammatory reaction. In the consideration of the *modus operandi* in the infections, one cannot but regard the septic process as a secondary, contributory or exciting factor. There must be the necessary requirements, the *locus minoris resistentia,* that facilitates embolic processes in nonterminal arterioles.

In the light of our present knowledge, we must regard duodenal ulcer as a disease depending upon a constitutional derangement occurring in individuals who present some stigmata of inferiority, the result of an increased irritability or unbalance in the autonomic nervous system, associated with a disordered mobilization in the calcium ion. The functional vagus derangement, manifested by an augmentation of the secretion and an increase in the contractibility of the smooth muscle fibres, has been sufficiently substantiated by clinical and pharmacological data.

"The visceral tetany" characterized by a local contraction in the muscularis mucosa and large muscle fibres causes interference in the circulation, leading to ischemia, which in the presence of pepsin and a hyperacid chyme, readily leads to digestion of the mucous membrane and ulcer formations. Only under such a spastic state may bacterial invasion form emboli which result in peptic ulcer.

The predilection of ulcer to develop on or about the pylorus, the groove of Retzius at the lesser curvature, the cardia and last, but not least, the gastrojejunal stomata where specialized functions exist, further indicate the relation between excessive function and ulcer formation.

Recently there has also been gathered ample evidence to indicate the association of peptic ulcer with organic lesions in the medulla oblongata, as well as in the peripheral vagus trunks. Gustav Singer reports a series of ulcers in cases of chronic tuberculous basilar meningitis. Exner and Schwartzman found six cases of peptic ulcer in ten cases of tabes with gastric crises.

Direct lesions to the vagus trunks have also been described. These occur in thoracic tuberculosis, due either to pressure from a mediastinal gland or from the involvement of one of the branches from a pulmonary focus. The association of ulcer with pulmonary tuberculosis is frequently encountered by those engaged in this field.

Brief mention may be made of ulcer occurring in uremia, in severe skin burns, spoken of as Curling's ulcer, in skin lesions such as pemphigus, in chronic plumbism, in endocardial and other circulatory diseases, and finally, in mechanical causes such as pressure or blows. The thermic ulcer, spoken of by Mayo, while bearing some relation to gastric ulcer, does not enter into the consideration of the duodenal ulcer, the duodenum being too remote to be affected by the intake of hot foods.

We must therefore regard the constitutional element as the predominating factor in the pathogenesis of peptic ulcer, for otherwise how can one explain the frequent recurrences in the life history of an ulcer, whether at the old scar or at a new site, and also its recurrence even after surgical excision, unless the entire ulcer bearing area is removed by subtotal gastrectomy, when the site of predilection of the peptic ulcer is forever done away with?

CLINICAL SYMPTOMATOLOGY

We shall now pass from the field of hypothesis and enter upon the more productive soil of clinical symptomatology. Nothing is more fascinating in medicine than the art of eliciting from the anamnesis in the chronic gastric complaint, the subtle underlying pathology. One must learn to elucidate the important symptoms in the patient's history, and be able to cull from the maze of complaints, often irrelevant, the significant symptoms. We must learn from our legal confrères the art of cross examination, and the greater such art, the more important will be the data gathered from our patient. Too much emphasis cannot be laid upon the importance of the anamnesis, for, besides the roentgen ray, clinical symptomatology is the only means we possess to aid in making a proper diagnosis. The surgeon is often confronted with cases for laparotomy in which no laboratory data are obtainable. He is then obliged to rely solely upon the resources of his own art.

The one outstanding symptom that should make us consider a diagnosis of ulcer is pain that bears a definite relation to the intake of food. Without pain or distress, there can be no ulcer. All other symptoms, such as heartburn, pressure, fullness, and belching, are subordinate and carry no significance in the absence of pain.

The intensity of the pain will vary with the acuteness of the disease, the amount of inflammatory reaction, the degree of the ulceration, whether superficial or penetrating to the visceral coat or perforating through it, with the character of the food, and last but not least, with the type of patient, whether phlegmatic or hypersensitive. The pain may vary from a mere epigastric distress to a degree of severe intensity requiring an anodyne for its relief. Or without any premonitory symp-

toms, an acute perforation may take place and all the concomitant characteristics of such a perforation suddenly become manifest.

TIME OF PAIN

The pain in duodenal ulcer appears late, from two to four hours after eating. In the earlier stages

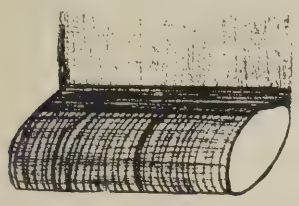

FIG. 1A

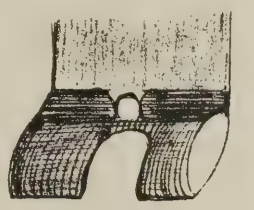

FIG. 1B

FIG. 1A.—Diagrammatic sketch of the muscular arrangement in the first portion of the duodenum showing the thickness of the longitudinal bundle of muscle fibres at the lesser curvature border and the attachment of the duodenohepatic ligament.

FIG. 1B.—Shows the mechanism of the muscular contraction in the presence of an ulcer at the lesser curvature.

it may make its appearance but once a day, usually in the late afternoon between four and five o'clock. As the disease progresses, the pain comes on with great regularity and punctuality with each meal, and also awakens the patient in the early morning hours between one and three o'clock. At first the pain may be characterized by a feeling of distention or oppression. Later, however, it assumes a boring, gnawing character accompanied by severe heartburn and waterbrash, the regurgitated material burning the patient's throat. The pain steadily rises in a crescendo fashion until either food, drink or soda bicarbonate gives prompt relief. The late pain in duodenal ulcer continues often into the next meal hour and gives rise to a sensation of hunger distress. The appetite is good and the severity of the hunger distress makes the patient take food frequently, with the result that most duodenal ulcer patients, in the early stages, appear well nourished. It is only later, when the pain is severe, that the patients fear the intake of food.

The pain of duodenal ulcer is referred upward under the ribs, and at times may be referred to the right nipple, but never to the shoulder or back. The pain of gastric ulcer is always referred to the left of the median line, and either to the back, to the left of the spine, or to the precordial region, depending upon the location of the ulcer, whether on the anterior or the posterior wall. At times it may simulate angina pectoris, and the case may present many difficulties of differentiation.

The night pains of ulcer differ from attacks of cholelithiasis by their lesser intensity, by their amelioration with changes in posture, and their prompt relief by the intake of either food or soda bicarbonate. The gallstone colic does not possess any of the previously mentioned characteristics, and usually requires morphine for its relief. Only in the old duodenal ulcer with pyloric stenosis does the pain and heartburn become agonizing in character, and is then only relieved by the induction of vomiting.

The influence of posture upon pain in ulcer is not sufficiently emphasized as a diagnostic aid, yet it often forms a pathognomonic sign. Some patients find relief by lying upon the left side, others by lying upon the abdomen, and still others by lying upon their backs, usually depending upon the location of the ulcer. Some will assume the supine or squatty posture. All these positions are protective measures to divert the irritating acid secretion from contact with the ulcer.

SUMMARY OF SYMPTOMS

To summarize the outstanding characteristics of pain in duodenal ulcer, we have:

1. The great regularity and punctuality of the pain, so that often patients can tell the time of the day by the onset of the pain.
2. Late pain coming on two to four hours after the meal.
3. Hunger pain.
4. Night pain.
5. Prompt relief by food or drink or alkali.
6. Amelioration by posture.
7. Pain referred to the right of the median line.

Moynihan epitomizes the sequence of events in duodenal ulcer in the following classical manner: 1, pain; 2, food; 3, comfort; 4, pain; and so on in a continuous cycle, while in the gastric type we have: 1, food; then 2, pain; and 3, comfort.

Another characteristic manifestation of the gastroduodenal ulcer is the periodical recurrence, usually in the early spring or late fall. However, it may recur at any time after a longer or shorter period of remission. The seasonal recurrence is dependent upon the increased irritability of the vegetative nervous system at these periods.

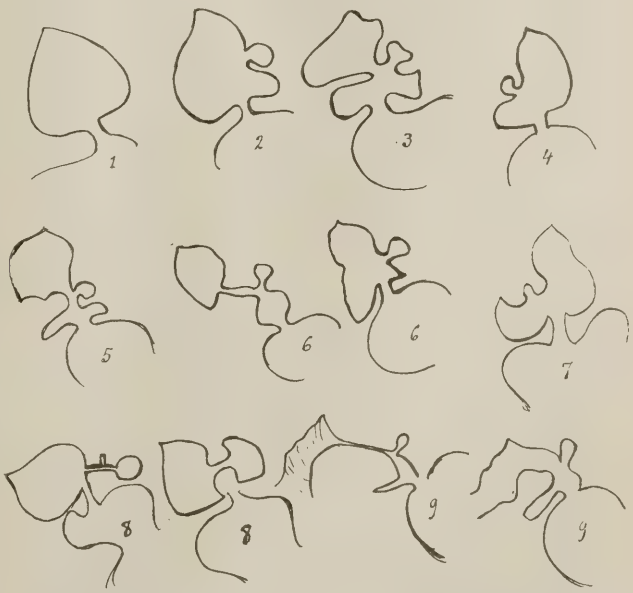

FIG. 2.—Tracings from actual cases indicating niches with their accompanying muscular contractions. 1, normal; 2, 3, 5, 6, 8, 9, niches on the lesser curvature, some after the administration of belladonna; 4 and 7, niches on the greater curvature.

GASTRIC HEMORRHAGE AND VOMITING

Gastric hemorrhage and vomiting, taught to be the two most important symptoms indispensable in the diagnosis of gastroduodenal ulcer, are found in the light of our new experience to be the least common. From the Mayo Clinic we learn that only

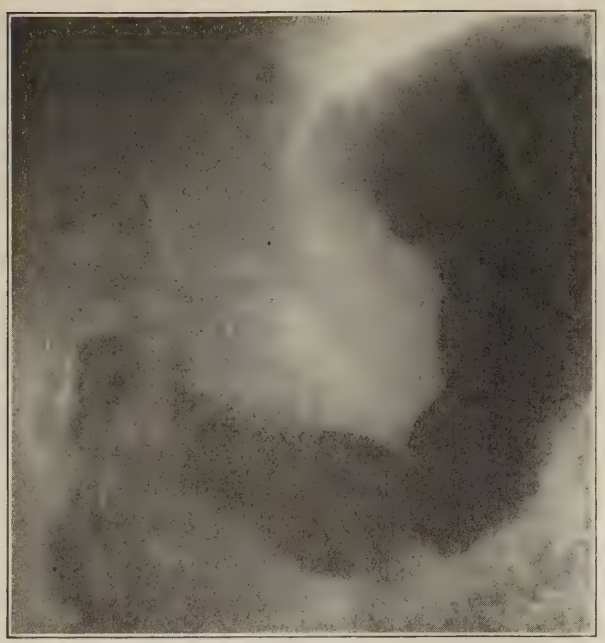

Fig. 3.—Niche at the lesser curvature border of the duodenum with retraction of the same border. Also spastic incisura at the greater curvature border in the plane of the niche. Operatively proved case.

twenty-five per cent. of all cases of hematemesis are due to ulcer; from Perry and Shaw only fifteen per cent., and Moynihan's statistics indicate that only ten per cent. of all gastric hemorrhages are caused by ulcer. The older teachings need revision, and the practitioner must erase from his memory certain facts which have been inculcated during his college days. In fact, Moynihan, speaking from the platform of the New York Academy of Medicine in 1919, remarked that, "In a case of gastric hemorrhage, consider all other conditions first, and last, peptic ulcer." We know now, thanks to the experience of the surgeon, that toxemias, and all forms of infection, such as gallbladder disease and appendicitis, are common etiological factors of gastric hemorrhages, not to mention gastric varices and gastritides. The term gastrorrhexis was introduced to indicate the obscure capillary bleeding from the mucous membrane of the stomach in the above mentioned conditions, the bleeding being seldom, if ever, found upon exploration. Gastric hemorrhage which persists and repeats itself frequently is usually indicative of a sclerosed and open vessel. Such bleeding cannot stop spontaneously, and therefore prompt surgical intervention is necessary if the life of the patient is to be saved. Melena is an important sign of duodenal bleeding. In the absence of the intake of bismuth or iron preparations, the appearance of a black stool signifies active duodenal bleeding. Physicians must be on their guard and always inquire into the character of the patient's stool.

VOMITING

Vomiting is encountered chiefly in pyloric stenosis, when the patient vomits large quantities containing food eaten the day before. The vomitus of such an ectatic stomach discloses the typical three layers of food, secretion and mucus. This stage, however, forms but a small minority of all ulcers. Vomiting is almost never found in the ordinary duodenal ulcer, which forms the great majority of all ulcers (eighty per cent.), unless in the late stages when it has become callous and causes stenosis. In the gastric ulcer of the lesser curvature type, vomiting is more common and is caused by the irritation of the food on the ulcerated area. It differs from the vomiting in pyloric stenosis by the early vomiting, the patient bringing up the food immediately after its intake. The vomiting in ulcer is associated with severe pain, the act of vomiting often giving complete relief. The dictum of Moynihan applies to vomiting more strongly than to gastric hemorrhage, for vomiting is present in almost any condition. Nevertheless, I have seen cases referred with a diagnosis of ulcer with all forms of vomiting, pregnancy not excluded. It is important to bear in mind that painless vomiting never occurs in ulcer.

PHYSICAL DIAGNOSIS

Physical examination offers nothing pathognomonic in the diagnosis of duodenal ulcer. Fluoroscopy has taught us that direct pressure upon an ulcer bearing duodenum frequently causes no pain. Tenderness is found only when the ulcer is in an active state of inflammation, with periduodenal changes. It is more commonly seen in the gastric type. It must be differentiated from the small epigastric hernia, which is always tender. The superficial hyperesthesia, the Head zone, the Boas tender point, the defense musculaire and the percussion tenderness are not sufficiently significant to help us in the diagnosis of duodenal ulcer. In gastric ulcer, however, the Boas tender point to the left of the lower dorsal spine is often encountered.

GASTRIC CHEMISTRY

The study of gastric chemistry as an aid in the diagnosis of peptic ulcer has received considerable criticism as to its utility. While it offers nothing pathognomonic, yet, if the test is properly conducted,

Fig. 4.—Characteristic functional defect at the greater curvature border of duodenum accompanying small funnelshaped niche at the lesser curvature side in the same segment. Operatively proved case.

sufficient data can be obtained that will enlighten us at a time when all other data are inconclusive. Rehfuss added a significant factor in the understanding of disturbed secretory physiology. The principle underlying his method, but not his technic, is worthy of consideration. The use of the Rehfuss tube is unphysiological and yields abnormal curves due to constant irritation of the tube. Erroneous results have made even Rehfuss pessimistic as to their value. I have convinced myself in numerous instances that the introduction of a tube in a fasting state can yield large amounts of a hyperacid secretion if kept up long enough. It is my custom to extract the gastric contents twice, one after the hour period and then again after the hour and a half period, using the ordinary tube.

In a study of 158 cases of duodenal ulcer, I found in sixty-two per cent. high acidities, between 40 and 90 free hydrochloric acid, and in eighty-two per cent. of these the free acidity rose during the second hour. Also, there was an approximation between the free acid and the total acid. Lastly, there was a marked hypersecretion in the second extraction (Table I).

In gastric ulcer, no such tendency to a late rise in the acid curve is seen. In a study of twenty-six cases I found, in the main, acidities which did not exceed the normal, and often gave low normal figures.

OCCULT BLOOD

Occult blood in the gastric contents carries less significance than in the feces. The slightest gagging of the patient causes capillary trauma to the mucous membrane of the stomach, particularly in the gastritides. Also swallowed discharges will interfere with the test.

The presence of occult blood in the feces, when the examination is carried out under proper precautions, is significant. There are too many factors of safety, however, which minimize the value of the test. The patient must be on a meat free diet for three days. Precaution as to bleeding gums, hemorrhoids, or any other anorectal bleeding is to be observed. Such extreme care can only be followed in an institution.

THERAPEUTIC TEST

Before finally passing from the chapter on the clinical consideration of duodenal ulcer, I must mention the socalled therapeutic test which is a corroborative diagnostic test. Any simple ulcer, if placed upon a Sippy or any other medical form of treatment, responds promptly with a complete cessation of all symptoms. This *eclatant* manner of the response to treatment is pathognomonic of ulcer. No other condition can show such a sudden cessation of all symptoms.

RÖNTGEN DIAGNOSIS

In the röntgen ray we possess today the greatest aid in the correct diagnosis of duodenal ulcer. Cole's studies on the duodenal defect made the diagnosis of postpyloric or duodenal ulcer possible in a larger percentage of cases and helped to establish the validity of the direct method of röntgen diagnosis.

The indirect method of röntgen diagnosis which is dependent upon functional disturbances has failed to supply even its staunchest adherents with more

FIG. 5.—Niche on lesser curvature of the duodenum, visualized only after complete relaxation of the duodenum by administration of belladonna and several days restriction to milk diet. Operatively proved case.

than presumptive evidence. Only the late manifestations met with in stenosis, such as gastrectasia, with intermittent deep gastric peristalsis and retention, can be regarded as immutable evidence of an organic lesion. This disturbed physiology is but an end result. The early symptom group of rapid motility, exaggerated peristalsis, increased tone, are common to many conditions and are dependent upon the increased irritability of the autonomic nervous system. They are present in simple vagotonia, in the psychoneurotic and psychotic, and in achylia gastrica. They arise also reflexly from diseases of other abdominal viscera such as the gallbladder, appendix and colon. They can be readily compared to the clinical symptom group of fullness, pressure, pyrosis, belching, and water brash, which are common in so many functional and organic diseases arising from intragastric and extragastric causes, not excluding even such remote conditions as tuberculosis, myocarditis, coronary disease, and interstitial nephritis. These group symptoms in themselves have no significance unless correlated with a definite clinical entity. Röntgenologically, as well as clinically, the indirect signs merely help to draw attention to an existing lesion without particularly specifying its character or location.

The direct method of Cole was the first attempt to interpret duodenal ulcers on direct evidence of changes taking place in the duodenum. The morphological differences, however, between a duodenal and a gastric ulcer, representing a filling defect in one and a pouching or niche in the other, were not clearly understood for some time. Cole attributed the filling defect on the duodenal contour to or such as induration of the ulcer or a traction in the walls of the duoder

later drew attention to the functional spastic phenomena in the wall of the duodenum in the segment of the ulcer, which also produced filling defects. The terms employed, therefore, such as duodenal "defect" or "deformity" are unspecific, as they do not make clear the actual pathology taking place in the duodenum.

Akerlund's (1) recent studies on the mechanics of the duodenum have shown that the röntgen deformities of duodenal ulcer consist in a combination of organic and functional changes and that the predominating component of the duodenal deformity is due to a functional spasm. His ability to compare a large series of operative cases with the röntgen findings aided materially in the elucidation of the röntgen deformities and in the correct interpretation of duodenal ulcers. He found that the most constant röntgen manifestation of the duodenal ulcer was a niche which was present in sixty per cent. of his series, and that the niche was accompanied by functional deformities which were analogous to the gastric incisures occurring in the plane of the ulcer, these always disappearing under anesthesia.

In the latter part of 1922 I undertook studies of a series of cases (2) with the object of making a close analysis of the various components of the röntgen deformities of duodenal ulcer, and particularly to study the frequency of niches. Forty-two cases were thus examined. It was found that the duodenal deformities were seldom due to organic changes and seldom represented the ulcer base proper, but were chiefly due to the associated muscular contractions accompanying the ulcer. By the [illegible]smodic measures, the duodenal wall [illegible] and under the röntgen ray such [illegible]ed in intensity or disappeared al[illegible] and niches which were not seen before became apparent. These muscular contractions can be readily compared with the intense blepharospasm in corneal ulcers or with cecal spasms in tuberculous ulcerations of the cecum where the surrounding musculature contracts tightly about the ulcer bearing area as a protective measure, and does not permit the entrance of foreign or noxious substances. When, however, the spasm is relieved, and such patients are reexamined with the pylorus and duodenum in a state of complete relaxation, then niches or ulcer pockets similar to gastric ulcers can be readily visualized. In our series, twenty-eight cases, or 66.6 per cent., could be interpreted as niches.

TABLE I: DUODENAL ULCERS

1st Hour		*2nd Hour*		*1st Hour*		*2nd Hour*	
F	T	F	T	F	T	F	T
60	90	75	120	22	60	38	70
60	72	78	102	20	58	22	54
62	90	70	100	60	80	60	80
66	88	74	94	60	80	60	84
60	82	72	82	50	68	50	64
58	82	62	84	46	60	46	72
62	76	70	80	24	58	24	46
50	72	70	90	80	90	66	80
54	80	66	88	70	100	60	80
54	76	60	82	68	82	55	65
54	68	60	78	66	80	60	70
50	72	60	84	60	88	58	88
42	72	50	84	58	80	45	70
42	68	62	88	52	80	40	50
42	64	60	84	50	74	48	74
42	60	48	90	50	74	48	74
42	54	46	64	50	72	40	64
40	62	58	72	46	64	40	80
38	60	68	80	44	56	42	80
38	58	70	110	44	64	40	70
34	48	58	78	40	72	22	36
34	40	56	76	40	60	38	44
30	70	40	68	25	45	22	48
30	50	38	56	22	68	20	44
25	50	40	60				

A series of forty-nine cases in which the gastric contents were examined at the end of the first hour and during the second hour. In thirty-nine cases, the acidity increased or remained the same during the second hour. In ten cases the acidity decreased.

METHOD TO RELAX THE DUODENUM AND PERMIT THE FILLING AND VISUALIZATION OF THE NICHE

In order to facilitate the filling of the niche and at the same time differentiate the spastic from the organic deformity, I have employed a routine method of reexamining the duodenum in a relaxed state.

This method is as follows: After the preliminary röntgen examination, the patient is administered twenty to twenty-five drops of tincture of belladonna every four hours for forty-eight hours, simultaneously restricting the diet to milk; at times even alkalies may be necessary. A marked relaxation of the pylorus and duodenum then ensues, the duodenal lumen is considerably widened, the spastic contracture of the greater curvature is lessened or may entirely disappear, and a niche which was not seen before often makes its appearance on the lesser curvature.

CLASSIFICATION OF THE RÖNTGEN DEFORMITIES IN DUODENAL ULCER.

The röntgen deformities of duodenal ulcers may be classified as follows: 1, niche; 2, defect; 3, bulb retraction; 4, diverticulum formations. They may occur either singly or in a combination of any or all of these.

The niche.—The niche may represent any stage of pathological change in the duodenal wall from a simple, nonindurated mucous ulcer to the penetrating and callous ulcer. Its filling and visualization are dependent upon the degree of irritability of the surrounding musculature. The slight constriction of the muscularis mucosa gives to the niche a flaskshaped appearance (Figs. 2, 3 and 5). If, however, the irritability is too intense, then the entire musculature surrounding the ulcerbearing area is puckered up, as has been mentioned, in a state of undue contraction, not permitting the contrast substance to enter the ulcerated area. With this method of relaxation, the filling of the ulcer pocket becomes greatly facilitated. Out of the twenty-eight niches visualized, twenty-two were on the lesser curvature, five on the greater, and one was an enface niche.

The functional deformities which accompany the niche are analogous to those found in the gastric ulcers of the lesser curvature type. They are, however, more constant and more pronounced on account of the greater irritability and small size of this organ. These deformities are, 1, incisura or segmental contraction, appearing usually on the greater curvature opposite the lesion; 2, a puckering contraction in the immediate vicinity of the niche, mostly found on the lesser curvature.

Duodenal defect.—A filling defect of the duodenum may be caused by, 1, organic changes such as induration, cicatricial contraction, adhesion or tumor; 2, functional changes such as spasm which are due to muscular contractions, the circular muscle fibres being drawn up toward the stronger longitudinal fibres on the lesser curvature side (Fig. 2). The contractions may be so intense that the lumen of the duodenum is reduced to the diameter of a match stick or thread.

The organic defects are rare, are usually situated on the lesser curvature side, are irregular in outline and are constant in size, while the spastic defect is rounded in outline, is broad and possesses smooth borders, and is usually found on the greater curvature side in the plane of the ulcer (Figs. 3 and 4), or at times at the base of the duodenum. They can be differentiated by the method above described when the functional defect is lessened in size or made to disappear completely, while the organic filling defect remains unchanged.

Bulb retraction.—Retraction of the duodenum is another form of spastic contracture and is caused by the contraction of the longitudinal bundle of muscle fibres on the lesser curvature side. It always surrounds the base of a niche. The retracted side appears shortened and drawn in, giving the lesser curvature border a concave appearance (Figs. 3 and 4). This bears some analogy to the gastric retraction which is occasionally seen in the saddle ulcer resulting in the snail form or tobacco pouch stomach, when the lesser curvature is shortened and curled upon itself.

Diverticulum associated with duodenal ulcer.—The diverticulum consists of a pouching of a portion of the duodenal wall situated in close proximity to the ulcer. They may be often mistaken for niches and can be differentiated by their ability to contract, changing their contour from plate to plate. They are always situated proximal to the ulcer, and their place of predilection is the basal portions of the duodenum.

CONCLUSIONS

In the röntgen interpretation of the duodenal deformities, an effort must be made to recognize the actual lesion taking place within the duodenum and express it from a pathological and anatomical standpoint. We must differentiate between a niche, infiltration, scar, and spastic contracture. Errors will be eliminated if one will follow a definite plan and apply himself to study minutely the character of the changes in each border, always bearing in mind the pathological entities which affect the duodenum and the manner in which they express themselves under the röntgen ray.

The indirect method is vague, indefinite, and confusing. It is dependent upon nervous phenomena and not upon the direct evidence of pathology in the duodenum. At its best, it leads but to presumptive evidence.

While the direct method is more painstaking, requiring serial radiography and greater technical accuracy, as well as finer interpretative study, its results are, however, positive.

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A Plea for Early Operation in Diseases of the Gallbladder*

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Notwithstanding a voluminous literature and an ever increasing experience, there seems to be no unanimity of opinion regarding the operative indications for diseases of the gallbladder and bile tracts. Some recommend early operation, others recommend late operation, and still others are utterly opposed to operation. Some advise operation during the acute attack; others would wait until the acute attack had subsided. This diversity of opinion upon the subject is so great that a perusal of the literature only tends to confuse the reader. The solution of this problem lies, in determining definite operative indications, such as exist in appendicitis, in order that the family physician, with whom lies the responsibility of making a decision for or against surgical consultation, and who also frequently must make the final decision for or against operation, may have something definite upon which to base his opinion.

The present chaos in biliary disease is, at least in part, attributable to the multiplicity of its clinical manifestations, to an underestimation of the importance of infection and to the seeming impossibility of determining universal operative indications to meet the requirements of all the various phases of this trouble. The fact that some of these patients recover spontaneously after the initial attack, adds to the existing confusion. This recovery, however, in most instances is only apparent, the infection lying dormant, prepared to flare up at the slightest provocation and to give rise to a fresh attack.

At operation, all types of biliary disease are seen, ranging from simple inflammations of the gallbladder and bile ducts to the severest forms of gangrene with perforation and general peritonitis. Frequently the infectious process extends to the neighboring organs, producing adhesions between the gallbladder, the pylorus, duodenum and omentum, and also causing inflammation of the gastrohepatic ligament, the head of the pancreas and the retroperitoneal lymph space. The contents of the gallbladder, besides cal-

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culi, some of which are always impacted in the neck of this organ, are either cloudy bile, thin or thick pus and mucus. As the amount of inflammatory exudate increases, the gallbladder becomes more and more distended, until it seems as though it must burst. The pressure upon its walls is tremendous, and according to the laws of hydraulic pressure, equal in all directions. Little by little the neck distends, until the impacted stone floats up into the fundus and permits the escape of the bile, calculi and infected material, into the cystic and common bile ducts.

After the gallbladder has discharged its contents into the deeper bile passages, the cystic orifice closes and one of the calculi remaining in the gallbladder is again firmly impacted into the gallbladder neck. Only in this way can the presence of calculi in the common duct be explained when there is complete occlusion of the cystic duct. If, however, the calculus is so firmly impacted in the cystic orifice, that it resists all attempts to float it up into the fundus, the pressure from above, accompanied by the most excruciating pain, millimetre by millimetre, slowly but surely, dilates the cystic orifice and duct to such an extent that frequently the cystic duct joins the common duct with a centimetre wide opening. After a passage has been established, the gallbladder discharges infected material and calculi into the common duct and duodenum. Some of the calculi and infected material generally remain in the common duct and cause infection, obstruction and dilatation of this organ, creating a situation fraught with the gravest danger for the patient. Here again, infection is the determining factor, aided and abetted by the calculi. But the calculi, although playing an important and most serious part, are of secondary importance, the primary rôle is played by the infection. If it were not for the infection, there would be no calculi except in the occasional instance of the sterile cholesterin stone. When once calculi are present, and when one of them, as usually happens, obstructs the cystic orifice, the natural forces of the individual are then unable to bring about a complete cessation of the infectious process, and it is only a matter of time before the disease becomes chronic, invades the neighboring organs, and provokes the most serious complications.

Before proceeding with the consideration of common duct infection, a condition which is practically always preventable, let us pause for a moment to analyze the situation. Is it possible to determine operative indications which will permit of surgical intervention in time to avoid the life endangering and crippling conditions such as have been described above? If the premise, which has been maintained so far in this article, that infection is the causative agent in all types of inflammatory biliary disease, is correct, it naturally follows that this same agent must act as a guide to the determining definite operative indications. That infection is a treacherous agent needs no further proof. Especially is this true if the infection is located in a concealed portion of the body, as in the gallbladder and the appendix. In these situations it is difficult to observe accurately its progress with the result that it may develop further, insidiously but irresistibly, until a serious crisis, in which the very life of the individual is at stake, is brought about. In the case of the appendix, this danger has long been recognized, and after many years of embittered strife and hectic argument the school of experience has taught us not to procrastinate but to operate as soon as inflammation of the appendix is diagnosed. In other words, the moment that appendicitis is definitely recognized, it becomes a surgical disease. However, in gallbladder disease, because the apparent danger does not appear so urgent, the tendency is to regard it less seriously and delay operation. Nevertheless, the same danger exists; only, in this instance, it is not generally recognized. Of course, it may be argued with propriety that the immediate danger of cholecystitis is less frequently as threatening as that of appendicitis, but this fact is more than offset by the remote complications occurring weeks, months and even years later, leading to chronic invalidism and finally death. Perhaps the danger approaches more slowly, but it comes on just as surely, yet the immediate danger of acute cholecystitis is by no means negligible and is probably much underestimated as attested by a number of cases occurring in my experience.

Case I.—S. O., male, came to my office on July 8, 1914, complaining of excruciating pain in the right upper abdomen. His past history was not important, except for slight attacks of indigestion from which he had suffered for many years. The present illness began about one hour previous to his coming to the office. At this time he was seized with severe pains which steadily grew more severe until they became almost unbearable. A hurried examination revealed the patient in severe shock with marked rigidity of the entire abdominal wall. A diagnosis of perforated abdominal viscus was made and the patient sent to the hospital for immediate operation.

Operation revealed a perforated gallbladder. This attack was the first from which this patient had ever suffered and bears out the statement made above that serious complications may arise even during the first attack.

Case II.—H. S., female, aged fifty-nine, entered Mt. Sinai Hospital on December 2, 1922, complaining of severe abdominal cramps. For the past twenty years she had suffered from repeated attacks of pain in the region of the gallbladder. Her present illness began on the day before with severe pain in the region of the gallbladder accompanied by vomiting. During the ten days previous to her admission to the hospital she was never free from pain.

Examination by me on the second day after admission to the hospital disclosed a typical case of cholecystitis. Immediate operation was advised but refused. On the following day, on account of increased severity of the symptoms, consent was obtained for operation. At operation a perforated gallbladder was found. This case strikingly substantiates the belief that even a short delay may prove most serious to the patient.

A search of the surgical records of the hospital revealed other cases of a similar nature but the two cases cited above are sufficient to illustrate the point that immediate danger in cholecystitis is a positive quantity and must always be reckoned with.

If it were possible to determine definitely, without jeopardizing the welfare of the patient, which cases of cholecystitis will end in recovery, without serious

complications, a conservative attitude might be adopted with a feeling of security. But since this is not possible, as our everyday clinical experience clearly shows, only one course is open, and that is to remove the offending gallbladder while the disease is still confined within its walls, and before it has had opportunity to cause perforation or peritonitis, or to invade the deeper bile passages. At only one time can this be accomplished with certainty, and that is, as soon as the diagnosis of cholecystitis is made. Even a few hours' delay may bring in its wake the most serious consequences. The same axiom that applies to appendicitis also applies to gallbladder disease, namely, that cholecystitis, upon recognition, immediately becomes a surgical disease.

Undoubtedly many cases of gallbladder disease will end in recovery without operation; also, in a great number of acute appendicitis cases the patients will recover without operation. This fact, however, does not deter the surgeon from removing the appendix, for fear that conservative treatment might be instituted in the wrong case. Why then should this reason prevent us from instituting the same rational and radical treatment in the case of the gallbladder? It is equally as impossible to distinguish between those cases of cholecystitis which will end in recovery of their own accord and those which will not, as is the case in appendicitis. Therefore, to avoid serious consequences, the same principle which acted as a guide in the former case must be adopted here. In the hands of those skilled to operate upon gallbladder disease, the mortality in early operation will be no greater than in appendicitis, and the results will be equally as good.

Stones in the common duct! Truly a sad chapter —sad especially, because, in most instances, it is a preventable condition and its occurrence must be attributed to a faulty understanding of the underlying pathology upon which gallbladder disease is based. Unfortunately, however, there will always be instances of common duct involvement, just as there are instances of gangrenous and perforated appendices due, no doubt, to certain mitigating circumstances beyond one's control. The family physician can do much to prevent the occurrence of this most serious condition, if he bears in mind the maxim, that a diseased gallbladder should be removed while the disease is still confined within its walls.

There are two clinical types of common duct involvement. In one, the individual is in apparent good health; he has neither fever, icterus, nor acholic stool. He is able to attend to his duties and only occasionally has a slight attack of indigestion, or a mild cholangitis attack accompanied by a slight icterus and a trivial elevation of temperature. His common duct is filled with calculi, but not completely obstructed. Bile, in sufficient quantity to maintain its function in the process of digestion, and to prevent jaundice, reaches the duodenum. Frequently, invoking the aid of numerous gallstone cures, he remains fairly comfortable for a period of years. However, the final day of reckoning always comes, and here again infection is the determining factor. On account of added infection or an acute exacerbation of the ever present inflammation, the duct becomes completely occluded and immediately gives rise to those most alarming symptoms so characteristic of common duct obstruction. The other type is acute from its very inception. There is severe pain, marked pyrexia, high grade icterus, chills, and acholic stool. In an incredibly short time the patient suffers great loss of weight, frequently forty to fifty pounds. His condition immediately becomes critical. Under these circumstances there is no longer any hesitancy on the part of anyone in recommending operation to meet this contingency. A fatal mistake, however, is frequently made, by delaying operation in the main hope that the patient's condition will improve or for fear that the patient may not be able to stand the shock of operation. Yet instead of improving, the patient grows worse from day to day, yes even from hour to hour, and the longer the operation is delayed, the less chance is there for recovery. Immediate operation, before the patient's vitality is completely sapped by torturing days and nights of pain, chills, high fever and inanition, offers the only chance of succor.

The dangers of instituting operative procedures during an acute attack of cholecystitis and cholangitis have been greatly exaggerated. In my experience and also that of my associates, who have operated during the acute attack for a considerable time, such danger is found to be no greater than operating during an acute attack of appendicitis. As has been stated above, delay may cause irreparable damage, and even if the patient escapes with his life, late operation or operation after the acute attack has subsided, greatly lessens his chance of ultimate cure.

The choice of operation depends upon the conditions which are found when the abdomen is opened. If there is empyema of the gallbladder, marked pericholecystitis and peritonitis, drainage should be instituted and the gallbladder removed at a secondary operation. If, however, the disease is still confined to the gallbladder, cholecystectomy is the operation of choice, providing there are no insurmountable contraindications, such as technical difficulties and complicating diseases. Probing of the common duct through an infected gallbladder is to be condemned on account of the danger of infecting the duct. This is especially true if the cystic orifice is occluded. It is better to incise the common duct directly if there is any doubt regarding the presence of stones.

CONCLUSIONS

Thus, on the basis of the pending date, the following conclusions are reached:

1. Infection is the determining factor in cholecystitis. The calculi are only of secondary importance.
2. Cholecystitis is a surgical disease.
3. Choledocholithiasis is a complication of cholecystitis, and is preventable in the vast majority of instances.
4. In cholecystitis the choledochitis operation should be performed during the initial acute attack. Waiting for the acute attack to subside may endanger the patient's life, give rise to serious infection of the neighboring structures, and always greatly lessens the chance for an ultimate cure.
5. Cholecystectomy is the operation of choice for cholecystitis, but if there are contraindications to its performance, cholecystostomy should be substituted.

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Psychosis Following Surgical Operations

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I wish to direct attention to a distinct clinical entity that can be called psychosis following surgical operations. Practically all patients operated upon present symptoms more or less severe and of varying duration, which show that a derangement of the mind existing prior to the operation has been increased. I shall not dwell here on what could be called the mild temporary psychosis following all surgical operations, done either under general or any form of local anesthesia, or of the psychosis following a condition that has caused an evident disturbance in the whole system, such as an acute intestinal obstruction, a fractured skull, an exophthalmic goitre, or other conditions, or of psychosis preexisting, and only aggravated by the surgical operation.

I shall give consideration only to those conditions observed by every surgeon, whereby normal, or apparently normal, patients show a derangement of the mind after surgical operations; real psychosis following surgical operations. I believe that this condition represents one of the least known and most serious complications following surgical intervention and many patients have been lost, who could have been saved, had their condition been properly interpreted and treated.

In fact, every surgeon has observed patients who from few to several hours after the operation show a marked change in their psychic condition, some becoming exceedingly restless and even violent to the point of having to be restrained by the straitjacket, others, on the contrary, showing a complete apathy, indifference to everybody, even to their dearest relatives, and to everything. The patients may lie perfectly still for periods of time varying from a few minutes to several hours; they may utter meaningless words, remove their coverings, try to get out of bed, look blankly at people surrounding them, and again fall back to perfect stillness and indifference. Although the patients may have been extremely clean and proper before operation, one may notice saliva dripping from their mouths, they may urinate, move their bowels in bed, without their knowledge, and remain indifferent and without discomfort in filth. At times a most dramatic incident occurs: the patient jumps out of a window or otherwise commits suicide or attempts to end his life. The condition of these patients may improve spontaneously or following haphazard medication: often it becomes worse and the patient is lost. In any event the surgeon and the internist called in consultation offer, at the best, the vague explanation that the condition may be due to postoperative shock or some indefinite toxic absorption.

The treatment of this condition is generally wholly inadequate and based on wrong principles, as is illustrated, for instance, by the administration of morphine, bromides and other drugs intended to quiet the patient, who instead, as will be shown later, might need the administration of stimulants.

Below I report three cases,[1] observed in the last few years, previous to the time in which instead of attempting to cure these patients we instituted a preventive treatment. We do not report cases observed during a previous period when we did not consider these patients as true cases of postoperative psychosis, because my experience is similar to that of other surgeons, and therefore of no particular interest.

I believe that postoperative psychosis is a clinical entity, distinct from any other condition. What characterizes true postoperative psychosis is the fact that *pulse, temperature, respiration and all other functions are normal at the onset of the psychic symptoms.* We insist on the words: "at the onset of the psychic symptoms," because at a later period disturbances more or less severe and often fatal will naturally ensue. But we emphasize the fact, on which a differential diagnosis must be based, that at the onset of the psychic symptoms, pulse, temperature, respiration and all other functions are normal. By normal we mean conditions that are considered normal, after surgical operations, as, for instance, a temperature of 101° or even 102° or 103° could not be called abnormal after an operation for an acute condition in the abdomen.

Pathogenesis.—The patients, whose cases I have reported, were all normal, or apparently normal, five of them having been examined in consultation with competent neurologists, so that the psychosis could not have arisen from a latent condition that manifested itself after the shock caused by the surgical operation, because all these patients were normal again in a few hours, we would dare to say (at the most, after three days) and remained normal. These cases, therefore, could reasonably be classed as cases of true postoperative psychosis. But the words postoperative psychosis do not mean anything unless we study why the operation should be followed in a comparatively small number out of the many in which surgical operations are performed, by a psychosis that, in at least three of our cases, we feel sure would have been fatal, if not properly interpreted and treated. There must be some factors that play an important part in the development of psychosis after a surgical operation that are not inherent to the operation itself, but to the individual patient. Indeed, it seems that the type and severity of the operation had little to do, *per se*, with the manifestation of the psychosis, because if we observed such psychosis in a case where a very extensive and difficult procedure, such as the removal of about three quarters of the stomach and a corresponding amount of the omentum, was resorted to, we have also noticed the same phenomenon in a case of simple appendectomy, which was performed in a few minutes and certainly caused little trauma and shock. It also seems that infection in these cases was not a factor, *per se*, because out of the six cases only one patient had a septic peritonitis; all the

[1]This study included three additional cases which have been omitted for lack of space.

others had normal temperatures and no infection, before the time of the manifestation of the psychosis or after. The anesthetic also seems to be a factor of not great importance *per se,* as far as quality and the amount of anesthetic used. Ether was used in one case and gas and oxygen in two (in the case of cancer of the stomach the anesthesia lasted about one hour and a half); local anesthesia (one spinal, the others infiltration) in the other three.

In these cases we have to exclude absolutely some of the factors that are commonly known to cause psychosis after a surgical operation, such as the removal of any important endocrinic organ, because in only one case (ovarian cyst) one such organ was removed. This patient, however, was past the menopause and the ovary had been completely destroyed by the pathological condition, so that the removal of the cystic ovary could not have caused any endocrinic disturbance. Nor can we blame the crushing of important and abundant tissues, or direct injury to the nervous system, or preoperative or postoperative infection, only one patient having any temperature; or intoxication from any special medication, as used to follow the extensive use of iodoform gauze; or autointoxication, that follows ileus or intestinal obstruction. Perhaps the only case in which there might have been an evident direct cause is the one patient accustomed to cocaine and morphine.

These patients, however, have all something in common: they were normal individuals who underwent an operation more or less severe; a psychosis developed soon after the operation, but not immediately; they were accustomed to some kind of drug, namely, one patient to cocaine and morphine, the others to alcohol, tobacco, coffee and tea; they were benefited by strychnine; they were normal again after a few days. That the psychosis followed the surgical operation and that it developed soon after the operation, but not immediately, there can be no doubt; that the patients were normal before the operation, and were normal soon after and are still normal seems also to be a positive fact, therefore I feel justified in classifying these cases as true postoperative psychosis.

Two important points must be considered: the patients were accustomed to some drugs; they were cured by strychnine. The mild drug habit, which seems to be the causative factor in the development of postoperative psychosis must be interpreted broadly. A person does not need to be an actual drug fiend in order to be influenced by and feel the effects of some drug. We may go a step further and assert that all the staple foodstuffs and mildest drink contain some substances which stimulate the activities of the organism as actual habit forming drugs do. It is only a question of degree of stimulation and habit forming that differentiates them. In fact, take away his dry or smoked fish from a Northern European or his spaghetti from the Southern Italian and their capacity for work, nay their health, is impaired. And returning to actual drug habits, who is not under the influence of some drug nowadays? Coffee, tea, chocolate, tobacco, are not yet on the prohibition list and are consumed daily in tremendous quantities by practically everyone. Alcoholic beverages have been, in the past, consumed legally in great quantities; at the present time only their quality seems decreased.

It seems reasonable to suppose that patients who are accustomed to the stimuli received by certain foodstuffs and especially by the socalled mild drugs, such as coffee, tea, chocolate, tobacco, alcohol, may suffer psychically when suddenly deprived of such stimuli as occurs after a surgical operation. This explanation of the pathogenesis of postoperative psychosis is important, because as far as we know due attention has never been given to what can be called mild drug habits as found among the civilized man of today, as the causative factor. It seems reasonable to think that the anesthetic, trauma and shock caused by a surgical operation, although in the greatest majority of cases not sufficient to unbalance the nervous system, might do so when the patient's nervous system is accustomed to the use of some drug, of which he or she is deprived after the operation, at a time when it is needed most. This explanation seems rational because we have not observed in children or young adults, the manifestation of such cases of psychosis as the ones described. Young people have not had time to contract any habit which might have affected in some way their nervous system.

Treatment.—The treatment of these cases, we believe, presents also an interesting subject for discussion. If the manifestation of the psychosis is due to the need of some drug, a need accentuated by the shock and trauma caused by the operation and the anesthetics, it would seem logical to think that the direct administration of the drug to which the patient was accustomed should be specific. It would seem logical, therefore, to inquire of any patient who has to undergo a surgical operation if he or she is accustomed to any drug, whether alcohol, coffee, tea, tobacco, morphine, cocaine, or any other, and administer such drug in small quantities as a preventive of the possible manifestation of a psychosis, or better be on the lookout, and give it immediately at the first manifestation of the psychosis. It is to be remembered that in cases of emergency this inquiry may not be possible, and we believe that in strychnine we have a valuable drug that will help the great majority of patients, especially the ones accustomed to tobacco, which obviously cannot be allowed in many cases immediately after the operation. (In a recent case we allowed a patient to smoke cigarettes on the evening he was operated upon, under local anesthesia for appendectomy. The patient who was accustomed to smoke an excessive number of cigarettes daily was very restless but was almost immediately quieted after smoking. Strychnine was also given hypodermically.)

I should like to emphasize that in these cases we must be practical: no matter how bad and unhealthy the patient's habits these habits should be restored as soon as possible, if the patient shows any sign of suffering from their interruption. Remember, a cripple will run faster and more securely with the most primitive crutches to which he is accustomed, than with the most perfect artificial limb recently applied. The moment this cripple had to walk far and fast for his safety would be the most inopportune time to make him change his old crutches for the most ideal artificial limb. The same principle applies to pa-

tients: after a surgical operation, when they have to walk fast and sometimes very far in order to recover their health, they need their habitual stimulants no matter how bad, as the cripple needs his old crutches. Bad habits may be reformed after complete recovery from the surgical operation. To be more specific, smoking should not be forbidden unless actual damage may ensue from it: tea, coffee and alcohol, if not allowed by mouth may be administered temporarily by rectum, although we realize how poor a substitute the rectum is for the one who craves for a drink of wine, whisky, coffee or tea.

The value of strychnine in these cases seems to be beyond discussion. We feel sure that in at least three cases without the aid of strychnine the patient would have been lost, and the same opinion was shared by all the doctors who have seen these cases. The value of strychnine seems to be due to the fact that this drug is indicated in cases of depression or functional nervous atony of the nervous system, when organic diseases are not present; that it greatly relieves the patients who are in surgical shock, acting as a stimulant, when the vasomotor centre is only depressed, as seems to be the case in patients suffering from psychosis due to the need of some drugs to which they are accustomed.

I do not advocate the use of strychnine as a preventive, because it would stimulate and excite the nervous system which would naturally become so much more susceptible to the trauma, shock and intoxication caused by the surgical operation and the anesthetic. Also it would be unwise to give strychnine to all patients who are delirious or distressed after a surgical operation, because all the patients who are distressed or delirious are not suffering from a psychosis. Naturally these patients must be treated *secundum artem* and the strychnine reserved for cases of true psychosis.

CASE I.—A. D. R., female, forty-six years of age. Nothing interesting in the family or personal histories except that patient suffered from pain in the lower abdomen during the last five years, especially for a few days preceding and following menstruation and was very nervous during the menopause. Patient was operated upon (spinal analgesia) for voluminous ovarian cyst of the left side which had completely destroyed the ovary. The night preceding the second day after operation patient began to be irrational and from a refined lady was changed into a woman using the vilest language and insulting everyone around her. Nothing abnormal could be detected in her physical condition except a slight increase and weakening of the pulse. Her condition became rapidly bad and the patient was so restless and exhausted herself in vain efforts to jump out of bed, and attempts to throw things at people surrounding her, that in the afternoon the pulse had become frequent and thready. Patient vomited twice during the late morning and early afternoon. Washing of the stomach was attempted, but could not be carried out. Morphine had been given hypodermically, without any result. Strychnine, one sixtieth of a grain, was administered at 10 a. m. and such injections repeated every eight hours. The results were extremely gratifying. Patient rested for short intervals during the night, slowly regained consciousness and was perfectly normal two days later. In this case it was found that the patient was a great tea and coffee drinker.

CASE II.—C. A. M., professional man, fifty-four years of age. Nothing interesting in the family or personal histories, except that the patient had suffered from typhoid fever eight years previously. Patient was operated upon for cholelithiasis (local anesthesia—novocaine one to three hundred). The operation was not difficult, although quite numerous and dense adhesions complicated the removal of the gallbladder. The patient was rather comfortable during the early part of the night, later began to be restless and the following morning decidedly irrational, trying to get out of bed, asking for his clothes, seeing people threatening him, talking meaningless words, and then falling into profound collapse. Patient was given morphine hypodermically at first symptoms of restlessness, but became so much worse rapidly that the family was notified as to the very serious condition. Pulse was only slightly weaker and more frequent than normal, 105°, temperature always around 100° and respirations around 24. Nothing could be detected to account for a condition that was threatening the life of the patient. Injections of strychnine, one sixtieth grain, were given hypodermically around 9 a. m. At 2 p. m. a friend of the patient, calling to see him, told me that perhaps it might be important to know that the patient in the last year was addicted to not only morphine but also to cocaine. Cocaine and morphine were immediately injected hypodermically; strychnine was repeated at 9 p. m. The patient was quieter in the evening and slept from 8:30 p. m. to 10 p. m. When he awoke, he was still irrational, but greatly improved, and out of immediate danger. I ordered another injection of morphine and cocaine at 2 a. m. and kept up the same treatment, strychnine, morphine and cocaine for three days. Patient improved steadily and was completely rational on the third day after the operation, and remained rational, making an uneventful recovery and later undergoing a successful treatment against the drug habit.

CASE VI.—Male, aged sixty-six. Operated upon (gas and oxygen) for extensive abdominal adhesions. Began to be slightly irrational the day after the operation. Strychnine was given immediately, as in the other cases, and patient was completely rational again on the fourth day after the operation. This man, an Italian, was accustomed to drink wine and to smoke rather heavily, and we feel that the strychnine prevented the manifestation of a graver psychosis than in the other cases.

CONCLUSIONS

It seems reasonable to conclude that, a, postoperative psychosis is a true separate clinical entity; b, as its pathogenesis, what may be called a mild drug habit plays an important rôle; c, in such cases strychnine is almost a specific; d, before submitting a patient to a surgical operation, we should make inquiries about his habits, habit forming drugs, coffee, tea, alcohol, tobacco, special foodstuffs, and give whatever patient was accustomed to; e, the habits, bad or good, of the patient should be restored as soon as possible after the operation; f, since we have followed this plan we have been fortunate in preventing psychosis as serious as the ones reported.

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Chronic Prostatitis With Special Reference to Its Focal Aspects*

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Chronic prostatitis has become a subject of particular interest on account of its apparent relation to focal infections. With the advance of knowledge concerning foci of infection, and diseases and symptoms resulting therefrom, the prostate gland is rapidly being assigned its legitimate place with infected teeth, tonsils, eroded cervixes, and so forth.

As early as 1815, Lognean described chronic inflammation of the prostate as a complication of gonorrhea. In 1836, Lallemand called attention to lesions in the prostate and seminal vesicles as being responsible for certain nervous and mental symptoms. In 1838, Verdier described the pathology of prostatitis. Thompson, Finger, Fuller, Guyon, Albarran, Young and others have also contributed to our knowledge of this subject.

ETIOLOGY

Although gonorrhea is the initiating cause of chronic prostatitis in the majority of cases, organisms borne through hematogenous and lymphogenous routes may also be causes. Prostatitis may develop within days or weeks following acute urethritis, or certain systemic infections. On the other hand, years may elapse before the definite chain of symptoms becomes prominent. It is likely that gonorrhea is responsible for only seventy-five to eighty per cent. of the cases. Of 1,627 patients with chronic prostatitis, diagnosed in the section on urology, Mayo Clinic, between the years 1922 and 1924, 1,239 (76.2 per cent.) admitted having had gonorrhea, while sixty-five (three and nine-tenths per cent.) gave indefinite histories, or else pleaded ignorance of having had it. Three hundred twenty-three (19.9 per cent.) did not give a history of having had gonorrhea.

Influenza, pneumonia, typhoid fever, measles, septicemia, and other infectious diseases are apparently definitely responsible for a certain number of cases, particularly cases in which chronic passive congestion of the posterior urethral adnexa has been present for some time. McCrae and others equally familiar with the subject assert that prostatic infection is not always specific; that it may arise from organisms in the blood, or urine, or neighboring structures. The rich blood supply and the numerous lymph passages in this region support this contention.

In cases of chronic prostatitis in which there is a definite history of gonorrhea the gonococci are seldom found on examination of the prostatic secretion. Thomas says that it is agreed that except in the acute catarrhal forms, the gonococci are demonstrable in only fifty to seventy-five per cent. of the cases in the first year, in fifteen to fifty per cent. in the second year, in five to ten per cent. in the third year, and that they are rarely found after this, provided reinfection has not occurred. Hogan claims that by repeated cultures, the gonococci may be demonstrated several years after infection. He reports one case in which the organisms were recovered eight or nine years after the original infection.

No single organism can be regarded as specific in the production of chronic prostatitis. Janes and Thomas call attention to the large number of diphtheroids as the predominating organisms. These are often intracellular, and closely resemble diplococci. It is possible that they have been mistaken for gonococci in some cases reported many years after the appearance of gonorrhea. In a series of 118 carefully selected cases, Player, Lee-Brown, and Mathé found Bacillus coli in twenty-four cases and hemolytic streptococci in thirteen. Cultures were sterile in fifty-seven cases. Hitchins and Brown assert that in forty-six cases Staphylococcus albus was cultured in twenty-seven; Staphylococcus aureus in eleven, nonliquefying cocci in thirty-four; streptococcus in twenty-seven; diphtheroids in thirty-four; colon bacillus in two, and gonococci in five. Tano found that in repeated cultures in thirty-four patients various aerobic and anaerobic organisms were present in twenty-four.

Although the foregoing citations do not cover the field of investigation in such cases, they demonstrate the variety of organisms that may be found. Apparently the initiating organisms do not remain

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alone, but secondary invaders enter. Gonococci die within a comparatively short time, as a rule. However, having invaded the territory they set up certain conditions of lowered local resistance, which predispose to invasion by various other organisms. This being true, it may be assumed that all types of chronic prostatitis are essentially alike and that it is unnecessary to attempt to differentiate postgonorrheal and nongonorrheal prostatitis. It is for this reason that the infected prostate may be included in the list of socalled infectious foci.

As exciting factors in the production of prostatitis may be mentioned excessive physiologic or abnormal sexual indulgence, exposure to cold, bicycle and horseback riding, or other influences causing prolonged congestion of the sexual organs. In rarer instances trauma seems to be a factor.

PATHOLOGY

Follicular, parenchymatous, interstitial, and periprostatic forms of prostatitis are recognized. These terms are quite descriptive. A clinical classification equally descriptive includes atrophic, hypertrophic, parenchymatous, interstitial, and cicatricial types. If the process develops through infection of the urethra the portion of the gland nearest the urethral canal is most frequently affected. Moreover, it tends to be segmental; that is, the infection is most marked around certain groups of glands. In certain cases suppuration develops. Endoglandular proliferation and desquamation of the epithelium lining the acini take place. Inflammatory infiltration and sclerosis of periacinous stroma may follow. In other cases the glandular elements may be replaced by fibrous hyperplasia. There is usually a combination of lesions of the parenchyma and stroma, varying in degree in different areas. Some acini are dilated, and frequently contain epithelial cells, leucocytes and bacteria; others are collapsed, or are replaced by fibrous tissue.

CLINICAL SYMPTOMS

In general the symptoms of chronic prostatitis may be divided into three general groups: urinary, sexual, and general.

1. In this group the most common urinary symptoms are burning on micturition, frequency, nocturia, slow stream, cloudy urine, urgency, hematuria, urethral discomfort, and shreds in the urine. These symptoms often occurred singly. In many, however, sex and general symptoms are included among the complaints.

2. The group presenting chiefly sexual symptoms is rather large. Table 1 illustrates the type and relative frequency of some of the symptoms.

In certain cases only one or two symptoms may be manifested, in others, several. The degree of the infection apparently does not always determine the number or severity of symptoms. In many cases, because of the close connection between the sexual apparatus and the central and sympathetic nervous systems, direct relation seems to exist between nervous stability and symptoms.

3. Mental symptoms, ranging from worry (usually sexual) to melancholia and despondency, are common. Occasionally the patient commits suicide. Two of our cases fall into this group. A number of the socalled male sex neurotics are victims of definite prostatitis, which manifests itself not only locally, but often generally, through its very definite effect on the nervous mechanism of the patient.

TABLE I

LOCAL AND SEXUAL COMPLAINTS FREQUENTLY DEFINITELY REFERABLE TO PROSTATITIS

Symptoms	*Cases*	*Per cent*
Urethral discharge	251	15.42
Perineal discomfort	168	10.32
Premature ejaculation	158	9.71
Suprapubic discomfort	87	5.34
Morning drop	70	4.30
Testicular neuralgia	54	3.31
Feeble erections	50	3.07
Urethral discomfort	47	2.88
Pain in groin	45	2.76
Impotency	41	2.51
Epididymitis	39	2.39
Painful ejaculation	34	2.08
Prostatorrhea	30	1.84
Pain in glans penis	28	1.72
Loss of libido	28	1.72
Rectal discomfort	25	1.53
Frequent nocturnal emissions	20	1.22
Sterility	19	1.16
Pruritis ani	17	1.04
Delayed ejaculations	15	0.92
Priapism	12	0.73
Multiple genital pains	10	0.61
Anesthetic ejaculations	8	0.49
Postcoital discomfort	6	0.36
Bloody semen	6	0.36

TABLE II

REMOTE GENERAL COMPLAINTS FREQUENTLY ASSOCIATED WITH PROSTATATIS

Complaints	*Cases*	*Per cent*
Polyarthritis	91	5.89
Pains in the back	67	4.11
Arthritis in lower spine	49	3.01
Arthritis in upper spine	35	2.15
Arthritis in hips, knees, and back	35	2.15
Sacroiliac pains	20	1.22
Pains in hips and legs	26	1.59
Pains in back and groins	19	1.16
Neuromuscular pains	16	0.98
Arthritis in upper extremities	14	0.86
Sciatica	12	0.72
Indefinite abdominal pains	11	0.67
Pains in hips and knees	10	0.60

RARER GENERAL COMPLAINTS

Calcaneal spurs	Angioneurotic edema
Iritis	Backache (essential?)
Secondary anemia	Erythema multiforme
Urticaria	Pyelonephritis
	Neuritis

TABLE III

PAST HISTORY OF GONORRHEA

Group	*Type of complaints*	*Cases*	*Past history of gonorrhea*	*Per cent of 1304 patients with history of gonorrhea*	*Patients without gonorrhea*	*Per cent of 323 patients denying gonorrhea*
1	Symptoms of arthritic, myalgic or neuralgic type only	333	240	18.4	93	28.7
2	Local and sexual sypmtoms only	597	500	38.4	97	30.0
3	Illbalanced symptoms, various neurotic symptoms, indefinite aches, gastric complaints, and so forth	107	86	6.6	21	6.5
4	Urologic symptoms alone, not necessarily related to prostatic disease (hematuria, pyuria, frequency, and so forth)	204	156	12.0	48	14.8
5	Asymptomatic cases referred for eugenic check, sterility, general investigation, and so forth	173	151	11.6	22	6.5
6	Remote conditions suggesting focus of infection (iritis, iridocyclitis, vitreous opacities, choroiditis, retinal hemorrhages, erythema multiforme, lymphadenitis, lymphangitis, allergic dermatitis, pyrexia and anemia, etc.)	45	29	2.2	16	4.9
7	Symptoms falling into two or more of the foregoing groups, special emphasis on none	168	142	10.8	26	7.7

Malaise; dull, ill defined headaches; general weakness; various aches and pains around the groin, perineum, or suprapubic region, head, back and legs; indolence; and so forth, are frequently the major symptoms in cases in which the prostate

gland is not suspected as being infected, and the source of definite symptoms.

DIAGNOSIS

The history of former urethritis should always direct attention to the prostate. Palpation of the prostate by rectum may be of aid in establishing a diagnosis. Usually in cases in which infection has followed the urethral path the gland is somewhat enlarged, irregular, and asymmetrical. It is not particularly sensitive, and it is often difficult to express secretion. When infection is of hematogenous origin the gland may feel normal in size or slightly enlarged. It is usually smooth, regular and symmetric. Sensation is frequently increased; and abundant secretion may be readily expressed.

Digital examination alone is insufficient; it is, moreover, a common cause of error, and usually fails to give a definite idea of the degree of infection. In a series of 1,627 cases of prostatitis, the gland was abnormal in 1,222 (75.1 per cent.). Four hundred fifteen (24.9 per cent.) of them were diagnosed as normal, following digital examination. These proved to be abnormal following provocative stimulation and repeated examinations. Thus it appears that, even in clinics in which the examination and investigation of the prostate gland remains in the hands of men familiar with urological conditions, reliance on a digital examination alone means failure of diagnosis in one fourth of the cases investigated.

By far the most accurate means of diagnosing prostatitis is microscopic examination of the secretion. The presence of an unusual number of pus cells means definite infection. In many cases an increased number of leucocytes and a corresponding decrease in the lecithin content of the secretion are found on primary examination. It is advantageous, often necessary, to subject the patient to provocative stimulation and repeated examinations in order to establish a diagnosis and determine the degree of the infection. Cases are graded according to the number of pus cells in the secretion:

Normal secretion contains 1 to 5 pus cells to each high-power field
Secretion with infection 1— 5 to 15 pus cells to each high-power field
Secretion with infection 2— 15 to 50 pus cells to each high-power field
Secretion with infection 3— 50 to 150 pus cells to each high-power field
Secretion with infection 4—150 and more pus cells to each high-power field.

The presence of small clumps of pus cells is practically always diagnostic. Such infection, however, may be latent, and several stimulating provocative treatments may be required to prove its severity. One or more small clumps of five to ten or more pus cells detected on examination of the secretion should immediately arouse suspicion. Frequently in cases with no other indication of infection a single cluster of pus cells invites further investigation, and repeated examinations disclose high-grade infection. Notthafft holds that often pus does not appear until after repeated massages, and further that at times pus does not make its appearance until after as many as fifteen massages of the vesicles.

The use of the Kollman dilators and silver salts is apparently of great aid in making a diagnosis within a comparatively short time. We are now employing a provocative procedure more or less as a routine in cases submitted for investigation, particularly in cases in which there is an apparent focal systemic condition, but in which all other foci have been definitely excluded, and cases in which there is a definite deviation from normal sexual or urinary function or findings. This procedure is similar in some respects to that described by Player and Mathé. It consists in carefully dilating the posterior urethra (usually 35 to 40 F.) by means of a Kollman posterior dilator, and then instilling one-half to one per cent. solution of silver nitrate into the posterior urethra with a Guyon catheter. A preliminary examination of prostatic secretion is made prior to instrumentation. Secretions are then examined at daily intervals over three to five days. Three or four examinations are usually sufficient to give a good idea of the degree of infection present, although more may be required. It is rarely necessary to repeat the dilatation, and never oftener than three days. Ordinarily, no harm results from such manipulation, provided gentleness and care can be exercised.

In a few cases dilatation and the instillation of silver nitrate seem to be contraindicated. In these cases the patients are, 1, feeble old men; 2, highly sensitive and intolerant men; 3, men presenting symptoms of definite hypertension, active pulmonary tuberculosis, lowered body resistance, subacute infection of the epididymis, and 4, those in whom the initial examination of the prostatic fluid discloses highgrade infection. In such cases a modified procedure should be employed. The use of a moderate sized sound and the instillation of protargol or argyrol solution to the posterior urethra may be sufficient. Massage, dilatation and instillation of a solution of silver salts seem of definite value in hastening diagnosis, and make it possible to estimate the degree of infection within a very few days. Any concession to the vigor of the provocative procedure will entail a proportionately long period of time for the estimation of the degree of infection.

It is probable that many diagnosticians and especially those who discourage the use of Kollman dilators, will hold that this method is too vigorous, and suggest that infection is initiated in some of the cases in which abundant purulent secretion is ultimately found after a negative primary finding. There is no proof of this. In more than two thousand five hundred cases examined by these methods we have had no reason to believe that the provocative method caused infection, or a more severe grade of infection than could have been proved by a sufficient number of repeated examinations of prostatic secretions, massage alone having been employed. To assure ourselves of this, we have investigated the cases in which a negative diagnosis was given at various times after provocative stimulations. Of the 124 cases examined between July and September, 1924, in which a negative diagnosis was made, one hundred were subjected to provocative stimulation, and repeatedly examined. In no case did the number of pus cells increase appreciably following manipulation. If no cells, or only occasional cells were found at the original examination, none or only occasional cells were found on subsequent examinations. In one case dilatations and fourteen examinations of the prostatic and vesicle fluid failed

to reveal pus cells in the secretion. In sixty-one of the 124 cases there was a history of gonorrhea having been present within from one to forty years. Forty-one of these patients were subjected to the provocative procedure. In another series of cases of functional impotency repeated prostatic massages and instrumentation failed to produce evidence of prostatitis. In this group, twenty treatments were the average.

In isolated cases there has been slight bleeding, pain, or general reaction following instrumentation. Bleeding seldom occurs, provided the proper care has been observed in introducing the instrument, and if dilatation has not been carried beyond the limit of tissue elasticity. We have found the use of local anesthetics in the urethra unnecessary in the majority of cases. When it is desirable to eliminate the possibility of disagreeable sensation or pain the instillation of five c.c. of two per cent. butyn solution (Abbott), or two per cent. procain solution, is sufficient. Satisfactory anesthesia is produced by butyn solution within four or five minutes; procain requires a considerably longer time, and is less effective.

Reactions seldom occur. The patient should be given a hot sitz bath and be placed in bed for several hours following urethral manipulations. Reactions have not been observed except in cases in which a very definite prostatitis has been diagnosed on primary examination, and in which an attempt was made to determine the severity of the process. However, in such cases reactions may follow simple prostatic massage. Such reactions are practically identical with those seen in certain cases following cystoscopic examinations or catheterization. In many cases in which cystoscopy has been followed by reaction, examination of the prostatic secretion has revealed the presence of pus cells in large numbers. It is suggestive, at least, that many reactions seen in males following urethral instrumentation are due to prostatic infection.

Subsequent findings in examination of the prostatic secretion, and clinical improvement in general metastatic conditions observed with surprising regularity, warrant our deduction that provocative stimulation is a valuable procedure when the prostate is a possible source of infection, and massage fails to express secretion containing pus cells. In certain types of cases it is warmly recommended as being the method most likely to produce a true diagnosis of the condition of the prostate gland within the shortest period of time. Included in these types are, 1, cases in which there is a history of gonorrhea without recent prostatic treatment; 2, cases of abnormal prostates, namely, asymmetry, size, sensation, or consistency; 3, cases in which urologic conditions are abnormal, such as especially asymptomatic pyuria, pyelonephritis, persistent cystitis, or sexual complaints that may be due to some infection; 4, cases presenting remote general symptoms that may be due to a focus of infection, and 5, cases in which the initial examination of prostatic secretion reveals clumps of pus cells, or granular or degenerated leucocytes.

In old men, however, there is an increase in leucocytes, and the presence of degenerated cells and debris is not uncommon. The significance of such findings in the prostatic secretion of men more than fifty must be judged according to the individual case. Darget says that chronic prostatitis in old men may be an entity associated or not associated with hypertrophy and that the two conditions are frequently confused.

TREATMENT

The routine treatment of prostatitis is fairly well understood by urologists, and patients should be referred to them in order to obtain the best results. The chief procedure consists of prostatic massage at regular intervals of from two to three days, and followed by an intraurethral instillation of argyrol (five per cent. aqueous solution). The ureter is dilated with sounds or Kollman instruments as indicated by the number of pus cells in the secretion, and the persistence of urinary symptoms. When the pus cells decrease, dilatation and stronger application of silver salts are employed. The employment of these methods at frequent intervals facilitates expression of secretion, stimulates absorption, and increases the patient's resistance to overcome the infection. Diday irrigations are employed frequently if chronic posterior urethritis complicates the condition. If the vesicles are involved along with the prostate, which often happens, the same general methods are employed, but the vesicles are also stripped with a vesicle stripping instrument. Hot sitz baths, short rectal douches, and constitutional measures, are also employed.

In cases in which there is pain, or in which the condition is especially stubborn, aolan (a nontoxic, nonbacterial nucleoalbumin), ten c.c., is injected intramuscularly three times a week. In many cases this apparently hastens improvement in local as well as in general symptoms. It has proved of most advantage in cases of arthritis in which the infection of the prostate and vesicles seemed to be the focus responsible for the condition. The best results come from treatment carried out in courses.

From four to eight weeks is the usual time required for a course of treatment, and a rest period of several months should follow the course. During the rest period systematic hydrotherapy is beneficial. During the interval of treatment, or after the second or third course, the infection is usually reduced to a low minimum. A recheck at subsequent periods of several months is advised, and indications are decided on for or against further treatment, depending on symptoms and whether the infection remains at a minimum, or deviates upwards.

There are few contraindications to treatment. In brief they are: 1, acute and subacute local and general conditions; 2, marked hypertension; 3, cases in which operation has recently been performed; 4, cases in which there has been an exhausting illness; 5, senility and inanition; 6, marked neurosis with no positive evidence of very definite infection; 7, malignant conditions which will prove fatal within a year; and 8, local urethral or rectal conditions which contraindicate manipulations.

Unless the case is definitely surgical operation is discouraged. Palliative treatment in most cases is satisfactory and should be the method of choice in dealing with these cases.

RESULTS

Cases of prostatitis and vesiculitis, if of long duration, are rarely cured. In most of the cases presenting symptoms referable to disease of the prostate gland systemic and prolonged local treatment will improve the patient's local and general condition. In our series only five per cent. failed to show some definite improvement. In practically all cases showing no local or general improvement it was found that other factors were probably responsible. Usually failures could be attributed to, 1, the presence of other septic foci; 2, local urethral conditions, or infection involving structures beyond the prostate and vesicles, and 3, a complication of diseases in patients with poor resistance. In some of the cases treated, particularly the early cases, the results were striking (Table 4).

TABLE IV

GENERAL RESULTS

	Cases
Chronic prostatitis	1627
Treated	771
Investigated and diagnosed only	856
Treated, definite improvement	731 (94.8 per cent)
Treated, no improvement	40 (5.2 per cent)

	Cases
Improvement graded 1, after average of 21.01 treatments	91
Improvement graded 2, after average of 22.53 treatments	303
Improvement graded 3, after average of 25.82 treatments	320
Improvement graded 4, after average of 24.75 treatments	17
Improvement of any grade received an average of 23.72 treatments	

Of the 323 nongonorrheal cases, 155 were treated; 168 were diagnosed only. In some of these, local improvement was not noted until other septic foci were removed. Results from local treatments, however, seem identical with those in patients giving a history of previous gonorrhea.

It is estimated that thirty-five per cent. of all males have some degree of prostatitis (13). We have positive objective and subjective evidence that an infected prostate gland resulting from gonorrheal or nongonorrheal invasion very frequently serves as an active focus of infection. Others have pointed this out previously. However, the symptoms are frequently so ill defined that the prostate is overlooked, while other infected foci are dealt with in the hope of ameliorating the patient's condition.

It is possible that there is some relationship between the prostate and other infectious foci, such as teeth and tonsils. What this relationship is remains to be proved, but it is suggested by the large number of cases of infected prostates without a history of genitourinary disease. In our series of patients with prostatitis, 225 had definite periapical infection of the teeth; 361 had definitely enlarged and questionable tonsils; 190 had tonsils which were diagnosed as definitely septic; and 291 had periapical infection and questionable types of tonsils. In many instances removal of teeth or tonsils did not relieve symptoms. In some instances the symptoms cleared readily on treatment of the prostatic condition without interference with infected teeth or tonsils. In another group relief followed attention to all foci.

In male patients more than sixteen, whose symptoms might possibly be dependent on a focus of infection, the prostate gland should be subjected to careful and systematic examination. Simple rectal palpation of the gland is not enough; the prostatic secretions should be examined also. Stained smears, cultures and animal experimentations do not seem to be necessary to diagnose prostatitis, although further investigation along these lines is warranted.

CONCLUSIONS

1. The prostate gland is infected in a large percentage of males, many of whom have no history of gonorrhea.

2. Prostatic infection is frequently responsible not only for numerous local and general symptoms, but for conditions classified as focal in origin.

3. Prostatitis may be latent, and if so, can often be diagnosed only after repeated examination of prostatic fluid subsequent to provocative stimulation.

4. By provocative stimulation we may usually estimate the degree of prostatic infection within three or four days.

5. Systematic treatment of prostatitis and vesiculitis, consisting of a few urologic procedures carefully and vigorously and systematically carried out, is simple, and in most instances is followed by definite improvement.

REPORTS OF CASES

Case I.—A man, aged twenty-six, came to the clinic April 29, 1922, complaining of pain in the feet. In December, 1920, apparently without cause, he became rather ill with fever and a slight chill, developed pain in the feet and knees, and had a urethral discharge. He was in the hospital for six weeks, and could not walk well for four months. The diagnosis at this time was gonorrheal rheumatism. Treatment consisted of prostatic massage, urethral injections, and vaccine. A recurrence in 1921 was treated similarly. On March 15, 1922, there was another recurrence with pain in wrists and fingers. On admission there were no urinary or sexual symptoms.

The Wassermann reaction and examination of the urine were negative. The hemoglobin was 78 per cent.; the leucocytes numbered 7,600. Tonsils 2, contained fluid pus; röntgenograms of the teeth revealed periapical infection 4, and of the feet bilateral calcaneal spurs. The prostate was small, smooth, regular, and firm; the vesicles on the left were infiltrated and both highly sensitive; the urethra was normal.

From April 26 to May 25, 1922, twenty-five local treatments were given; May 24 tonsillectomy was performed. Symptoms were all relieved before the tonsillectomy. July 14, the patient returned and could not walk on account of acute arthritis of the feet and ankles. From July 14, 1922, to May 17, 1923, 114 treatments were given and fifteen injections of gonorrheal glycerol vaccine were administered. Findings were negative on examination May 17, 1923. No signs or symptoms were evident.

Case II.—A man, aged forty-one, came to the clinic July 22, 1924, complaining of pain in the legs of eight years' duration. The pain was mild at first, but progressive. It was intermittent, occurring once in from three to four weeks, lasting from a few days to four weeks, and was not localized to any particular part of the lower extremities. Aspirin afforded relief. There was a history of gonorrheal infection fifteen years before, with complications in the left epididymis, but apparently cured in six weeks.

(*To be concluded*)

Renal Function Determination Aided by the Use of Sodium Salicylate Intravenously*

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The advent (1) and development (2) of the phenolsulphonephthalein test has no doubt been the most valuable addition to the armamentarium of renal function determination. Its simplicity of application and the comparative ease of its interpretation have at once made it popular, so that it is now the most widely used test, especially in this country.

In reviewing the literature upon renal function tests, one is, however, impressed with the fact that no single test is absolutely reliable. One must use a combination of tests in order to gather reliable data. Thus Pepper and Austin (3) report a case, that of a boy of nineteen in whom twenty-five urinary examinations were made during a period of over three months in which the boy was under observation. He never failed to show a large amount of albumin, two and seven tenths to eight gr. to the litre, and at the same time an exceedingly large number of hyaline, granular, fatty and epithelial casts, free fat droplets and much renal epithelium. They used the dye twice, as follows:

1. a. Phenolsulphonephthalein: Elimination after one hour, fifty per cent., after two hours, seventy-one per cent.
   b. Phenolsulphonephthalein: (Two weeks later, but within the three months' period of observation). Elimination after one hour, sixty-seven per cent., after two hours, eighty-two per cent.
2. Indigo carmine was used once and was seen at the ureteral orifices in six and four minutes.

Both these functional tests showed, therefore, unusually prompt elimination. Other similar cases were reported by these authors in the same paper. They conclude that in some cases of nephritis although an impairment of sodium chloride elimination begins to show, the phenolsulphonephthalein test is usually prompt.

Baetzer (4) draws the following conclusions:

1. There exist cases of well marked nephritis with evidence of impairment of renal function in which certain tests reveal an eliminative power or even above normal.

2. He describes cases from which he concludes that there may be a stage in nephritis when hyperpermeability exists at least to phenolsulphonephthalein and some other substances with an elective impermeability for chlorides as suggested by Widal. He further concludes that it is necessary to study renal function from the viewpoint of a considerable series of functional tests rather than to draw conclusions from the excretion of any one drug. Piersol (5) is of the opinion that the phthalein test is of little value in the early diagnosis of nephritis, since deficient phthalein output does not occur until evidences of renal disease are recognizable by ordinary means, such as physical examinations, blood pressure, determinations and uranalysis. On the contrary, these clinical manifestations of nephritis may be obvious while the phthalein test is still quite normal.

Salt retention.—As stated above, salt retention is a valuable diagnostic hint in the impairment of renal elimination. Mosenthal (6) in an exhaustive article states that in nephritis, two distinct types of excretion are found.

a. Salt retention not associated with deficient nitrogen elimination.

b. In advanced cases of primary or secondary contracted kidney characterized by hypertension and terminations in uremia, the quantities of salt and nitrogen are both diminished.

In no instance has the combination of nitrogen retention with sufficient salt excretion been met with.

It has been found by Frothingham (7) and others (8) that one of the most useful early signs of impaired renal function, is the delay in the elimination of chlorides in the urine.

In summarizing the data as enumerated above, one must draw the following conclusions:

1. Dye substances by themselves are not always absolutely dependable in the determination of renal eliminative power.

2. Accurate data can only be obtained by the use of a series of function tests.

3. The constancy of salt retention in the functionally impaired kidney.

In view of these facts I deemed it advisable to find a salt which could be administered intravenously, one that could be eliminated rapidly by the normal kidney and detected by a reagent. Sodium salicylate appears to comply with these requirements. This drug when used intravenously makes its appearance in the urine from within two and a half to five minutes. Its presence can be recognized at once by the appearance of a fine violet or purple color when collected into a test tube containing three c.c. of a one per cent. solution of ferric chloride.

Previous use.—This drug was used intravenously by many authorities, in the treatment of rheumatic fever. Thus Mendel (9), Reubens (10), Winkelmann (11) and in this country, Lewis A. Conner (12) have advocated its use intravenously for the treatment of the various forms of rheumatic fever with varying results. This made it unnecessary for us to test its toxicity on animals prior to our use for our present purpose.

These authors used the drug in doses even as high as thirty gr. without any ill effect, but we found that for our purpose one gram is sufficient. This is dissolved in five c.c. sterile distilled water, or, one can also use any of the ampules that are put up by many drug concerns who specialize in intravenous products.

In the early stages of our experiments we prepared the solution ourselves, but later we resorted to the

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use of ampules containing one gram of sodium salicylate dissolved in five c.c. of an isotonic solution.

Technic.—Half hour before the test, the patient is ordered to drink about two tumblers of water, to insure good urinary secretion. The patient is then cystoscoped and the ureters catheterized. After a sufficient amount of urine is collected for laboratory tests, the sodium salicylate is injected intravenously and exact time noted. Two test tubes are prepared, each containing three c.c. of a one per cent. solution of ferric chloride. After exactly three minutes have elapsed from the time the injection was made, the urine is now collected into the two test tubes. In a normal kidney, a fine violet color immediately appears, rapidly increasing in intensity. The reason for waiting exactly three minutes is that often, when the urine is concentrated due to lack of water ingestion and when strongly alkaline a flocculent precipitate may take place with the reagent of the ferris chloride. By not collecting the urine before three minutes have elapsed, this can be avoided.

While our experience with this test in nonsurgical renal conditions is as yet limited, we are convinced that in surgical conditions it is of undoubted value. We shall quote from our records a few cases to illustrate the value of its use. Its importance lies in the fact that in a normal kidney the drug makes its appearance from within two and one half to five minutes, most often three minutes. Any delay after five minutes usually indicates impaired or interfered renal function, and the longer the delay the greater is the impairment or interference. The drug is easily detected in mixed urine (from several patients) in dilutions of one to ten thousand. For the sake of brevity, only the salient points will be enumerated.

Case I.—U. C., boy of nineteen, complained for past year of frequency of urination, urgency, occasional hematuria. Both ureters were catheterized. Left side almost clear urine. Right side showed a pale cloudy specimen. Microscopically the right side shows much pus, and many tubercle bacilli. Sodium salicylate given intravenously showed up strongly on the left side within four minutes, and only the faintest possible trace on the right side after a lapse of fifteen minutes. Nephrectomy at the Bronx Hospital revealed caseous destruction of almost entire parenchyma with a thin border of cortex left.

Case II.—A. R., Bronx Hospital (11851), a female patient convalescing from a double pyelitis; sodium salicylate showed up in three minutes on both sides.

Case III.—J. F., male, aged fifty-three, Bronx Hospital, nephrectomy previously performed on right side for calculous pyonephrosis. Left side showed up the sodium salicylate in three minutes. The remaining kidney had been previously established as functioning normally.

Case IV.—Bronx Hospital (2897), a woman whose kidneys have been previously established as negative, the sodium salicylate appeared in three minutes.

Case V.—Mrs. P., aged forty-nine. History of renal colic and backache extending over a period of three years. X ray revealed two large stones and two smaller ones in her right kidney. Catheterization revealed clear urine from left side and thin pus from the right side. Sodium salicylate intravenously showed up in three minutes on the left side and practically none from the right side in fifteen minutes. Nephrectomy at the Bronx Hospital revealed several large stones, abscess formation and complete destruction of the kidney substance by sacculated abscesses.

Case VI.—A. R., male (Bronx Hospital, 11731), suspected renal calculus, but x ray was negative, urine negative. Sodium salicylate came down on both sides in three minutes. No obstruction found.

Case VII.—H. K. (Bronx Hospital, 11935). Admitted for renal colic. Sodium salicylate appeared on right side in three minutes, and on the left side in fourteen minutes. X ray revealed a stone on the right side, at the ureterorenal junction. Pyelogram showed a moderately dilated pelvis. The impaired elimination was no doubt due to the back pressure caused by the nonescaping accumulating urine in the renal pelvis.

Case VIII.—N. P. (office). Young adult male with a persistent phosphaturia, causing an irritable bladder. Ureteral catheterized specimens were negative, and sodium salicylate showed up on both sides in three minutes.

Case IX.—Female patient at the Beth Israel Hospital (O. P. D. 347). Laboratory reported a negative urine. Patient complained of backache. Sodium salicylate appeared in three minutes on both sides.

Case X.—Mrs. G. (Bronx Hospital 9734), a case of chronic cholecystitis and chronic appendicitis. Urine negative. Sodium salicylate appeared within four minutes.

Many other cases in which sodium salicylate was used gave similar results as described above, and it would be futile to enumerate any others.

It appears that when elimination on one side is impaired, the remaining side, if not diseased, excretes the salt faster and in larger amount than a kidney whose mate is carrying one half of the burden. Sodium salicylate cannot be given intramuscularly, because it leaves painful indurations and its elimination is not as accurate. On the other hand, its detection is not hampered by the occasional traumatic hematuria which arises from instrumentation. This salt has great possibilties, also in medical nephritic conditions (without ureteral catheterization) if properly worked out.

Thus, the time is to be determined as to how long it takes for its complete excretion from the normal kidneys and then compared with that of impaired kidneys and thus develop a working table. This may be stated in the following manner:

The patient is ordered to consume about 150 to 200 c.c. of water half hour prior to the commencement of the test. Five minutes before the drug is given intravenously the patient empties his bladder. Five minutes after the drug is administered, the patient urinates into a receptacle and the urine is tested with the reagent. If elimination is normal, the drug will now make its first appearance. From now on, the urine is tested every hour, providing it made its first appearance, and finally noting when it is no longer detected. In hospital ambulatory cases, the patient can be instructed to carry out the test himself and produce the final data for interpretation.

CONCLUSIONS

1. No dye substance by itself is absolutely reliable as a renal function test.
2. Accurate data can only be procured by using a combination of several tests.
3. Retardation of salt elimination is fairly constant in renal impairment.
4. Sodium salicylate is quickly eliminated by the normal kidney and held back by the diseased one.
5. The presence of sodium salicylate can be detected in the urine as quickly as any dye substance.
6. In surgical conditions of the kidney, sodium salicylate is an aid in determination of renal function.
7. Sodium salicylate is also a mild urinary antiseptic.

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17 EAST THIRTY-EIGHTH STREET.

Regional Anesthesia in Urological Surgery*

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On visiting the large surgical clinics of Europe one cannot help but be impressed by the great strides they have taken in the art of local and regional anesthesia. In some institutions local has almost entirely supplanted general anesthesia. At other clinics its use has not extended quite this far, but it is everywhere notably on the increase. It is most interesting to see an all local anesthesia clinic as is often found in the services of Illyes, Braun, Kappis, Willms, Narath, Denk and others. In urological surgery its importance is especially emphasized by Illyes, who rarely employs general anesthesia.

Local anesthesia becomes of especial importance to those of us who are doing urological surgery. This because of the untoward influences which general anesthetics have on the whole or parts of the urinary mechanism which is often already extensively diseased.

The baneful effects of general anesthesia are particularly well emphasized in those suffering from prostatic hypertrophy, associated with all the evidences of chronic urinary obstruction. In these cases the renal function is at a low ebb, the blood urea is comparatively high, while an examination of the urine often shows considerable albumin, pus and casts. Back pressure often gives rise to a chronic nephritis and pyelonephritis. Associated with these conditions but beyond the urinary tract are usually the evidences of the cardiorenal syndrome as manifested by emphysema, arteriosclerosis, hypertension and myocarditis. Aside from this we must also remember that the advanced age of these patients greatly diminish their reserve force.

It has been our custom during the past few years to carry out most of our urological operative procedures under local or regional anesthesia. In considering this subject we will divide these procedures into three main groups as follows: First, kidney and ureter operations; second, bladder, prostate and urethra; third, the testes, their coverings and the spermatic cord.

In the first group we use paravertebral anesthesia. In the second group the sacral anesthesia and in third division the usual hernia anesthetic technic are employed.

ANESTHETIC SOLUTIONS

In practically every case we use straight neocaine one per cent. freshly made in distilled water. We have been unable to confirm the rapid diffusion of the solution with increased anesthesia by the addition of sodium bicarbonate. The use of this salt was originally recommended by Läwen and since strongly endorsed by Scholl, Meeker and others. We are of the opinion that the addition of suprarenal products not only does not improve our anesthetic media, but decidedly increases its toxicity. This viewpoint is also in accord with the researches of Lowsley (7), the report of Mayer (8) and the investigations of Schmidt (9). Neocaine in our experience is decidedly the best of the local anesthetics and properly administered is practically devoid of danger.

PARAVERTEBRAL ANESTHESIA

In carrying out the technic of paravertebral anesthesia, it is our custom to precede the actual injections of neocaine by the use of a nerve sedative. For this purpose we employ morphine sulphate 1/6 gr. and scopolamine 1/150 gr., given hypodermically about one hour before the operation. In our previous papers (10) we have called attention to the psychic factors involved and the methods employed to allay any condition of nervous excitation.

When ready to proceed with the anesthetic we

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place the patient on the edge of the operating table. His hands and forearms are placed between his legs, while the body is well bent forward, so that the vertebra will be made prominent. We have obtained the best results by combining a paravertebral injection in which we inject the eighth to the twelfth dorsal nerves, with a large regional block of the lumbar and lateral abdominal areas.

LANDMARKS

For the paravertebral injection proper, the angle of the scapula, the lower border of the twelfth rib and the spinous processes of the eighth to the twelfth dorsal vertebra are used.

For the regional block, the anterior and posterior superior iliac spines below, and the spinous process of the first lumbar vertebra and the anterior end of the eleventh rib above, are utilized as landmarks.

TECHNIC OF ADMINISTRATION

Starting at the lower border of the twelfth rib about four centimetres or roughly two or two and a half fingers' breadth from the spinous process of the vertebra we make a skin puncture. From this point we make a continuous series of wheals in the corium extending up to a point lateral of the angle of the scapula, which usually is opposite the eighth dorsal vertebra. In making these injections, the outfits of Labat, Babcock or Dunn are of assistance, but not indispensable. Pneumatic injectors of the type recommended by Farr are of distinct assistance, but occasionally fail when needed most.

Upon the completion of the series of dermal wheals mentioned we proceed to our paravertebral injections. The needle is passed through the wheal to the lower border of the eighth rib, injecting a little neocaine as we go. When the subcostal line is reached (which sometimes requires a little angling), the needle is slightly withdrawn and turned almost parallel to the rib, point headed toward the spine. The needle is then slowly passed along the lower rib border till we impinge on the transverse process of one of the adjoining vertebra, constantly injecting as we proceed. When the process is reached the point of the needle is turned slightly forward and fanwise injections of about five c.c. made at this point. This will block not only the intercostal nerves, but the very important rami communicantes as well. If we are successful in this, we should have not only a good anesthesia of the skin, but visceral anesthesia with relaxations of the abdominal wall.

In approaching the foramen between the transverse processes care must be taken not to use too much pressure on the syringe, as it is at this point that toxic symptoms usually appear. The same procedure is repeated with all of the intercostal nerves down to the twelfth. In the area of the twelfth dorsal nerve, it is advisable to spread the neocaine rather widely, as this nerve and its branches often diverge extensively in their course.

Upon completion of the paravertebral injections proper we proceed to the loin infiltrations or as it is sometimes called, the quadratus block. A wheal is raised about two and one half cm. from the spinous process of the first lumbar vertebra. Another is made close to the anterior end of the eleventh rib. Wheals are also raised just above the anterior and posterior superior spines of the ilium. From these four points superficial and deep injections are made toward the centre and toward each wheal. An injection made down through the muscular tissues at a midpoint on the crest of the ilium, and a midpoint between this and the twelfth rib in the posterior axillary line, will aid in the anesthesia of the perirenal tissues. In the loin, injection of about sixty to eighty c.c. of one per cent. neocaine are used; the total amount usually being about one hundred c.c.

Fig. 1.—Points of injection for paravertebral anesthesia.

The lumbar injections take good care of the ilioinguinal and iliohypogastric nerves as well as any other nerve branches that may stray into the field from above or below.

THE SACRAL ANESTHESIAS

Much confusion exists regarding the nomenclature of the various sacral anesthesias. The anterior sacral injections are called by Braun, parasacral anesthesia; by others it is called presacral and this latter appeals to us as more nearly correct.

Injection of the posterior sacral foramen is called by the French transacral, by Lowsley and others it is called parasacral. As the same process in the cervical, dorsal and lumbar region is called paravertebral, the reason for designating this procedure parasacral is obvious. Parasacral in this paper therefore refers to postsacral injections.

Sacral anesthesia proper seems to be pretty well fixed in our minds in spite of several attempts to misbrand it. Sacral anesthesia is of considerable value in cystoscopy, cystotomy, prostatomy and operations on the urethra, particularly in stricture. Sacral anesthesia alone is often etirely efficient for the performance of perineal prostatectomy. In simple cystotomy via the perineum we always employ sacral anesthesia. For suprapubic cystotomy, local infiltration of the line of incision combined with sacral anesthesia permits great freedom for operative manipulations within the bladder. Our technic simply consists in making an anesthetic wheal midway between the sacral cornua. We then plunge our long anesthetic needle through this at right angles to the skin and carry it down through the hiatal membrane until we strike bone; the needle is then slightly withdrawn and its point directed up the sacral canal.

The chief dangers here are puncturing a vessel or the dura; both of which are remote. When they do happen the needle should simply be withdrawn and reinserted. We should be rather careful to inject our anesthetic solution slowly; we have less ill effects by so doing.

PARASACRAL (POSTERIOR SACRAL)

For the performance of perineal prostatectomy we believe this method an excellent procedure.

After considerable experience we think the injection through the hiatal membrane (sacral anesthesia) combined with the injection of the posterior sacral

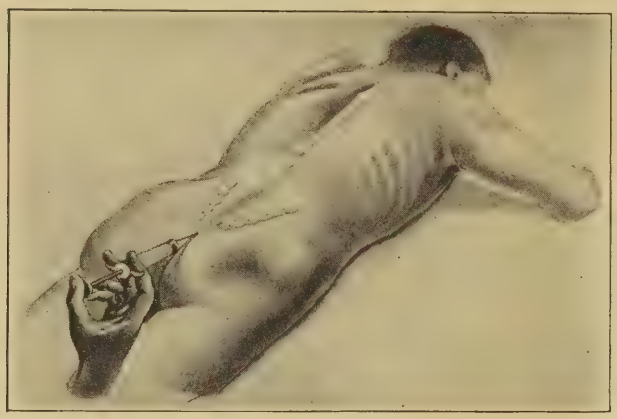

Fig. 2.—Sacral and posterior sacral anesthesia.

foramen to be the method par excellence for perineal extirpation of the prostate.

METHOD OF INJECTION

After making the usual caudal injections we locate the posterior sacral foramen by drawing a line upward and outwards from each sacral cornua to the posterior superior spine of the ilium. This forms a V. By making a puncture just below and slightly external to the sacral cornua we locate the fifth sacral nerve. This is done on each side. Following this, four small wheals should be made on the line from the cornua to the postsuperior iliac spine. Each one of these will be about opposite the spinous process of the sacrum, or roughly about a finger's breadth apart. Our needle is now passed directly into each one of these foramen and about five c.c. of one per cent. neocaine injected. Most of us have usually felt that these foramen run directly downward. Considerable observation has shown us that the third foramen alone runs in that direction, all of the others running downward and outward. It is by no means always possible to land in the foramen at the first plunge. Instead of that we usually strike the bone with our needle and after a few taps are in the canal. This method of injecting the posterior sacral foramen was first introduced by Danis in 1913. Braun in commenting on it states that it will never compete with his parasacral method. The method of Danis is, however, by far the better technic, and possesses less elements of danger. Puncture of both the rectum and bladder are possibilities of the Danis technic, but are extremely rare. Are not these multiple sacral punctures very painful? The answer is no; provided your original hiatal injection is a success. This fact is advanced by some who claim sacral anesthesia alone is sufficient for all conditions for which the injection of the postsacral nerves is recommended. Practical experience has demonstrated to us, however, that this is not quite correct.

Sacral anesthesia has been recommended by some for the performance of operations on the scrotum and testicles. It rarely works, however, and a little review of the nervous system of this region will give us the answer. It is true that it is an aid, but infiltration anesthesia is always required in addition.

SCROTUM AND TESTICLES

Practically every operation on the scrotum and testicles may be accomplished by the use of a block anesthesia extending entirely around the penis and scrotum at the point where they connect with the skin of the abdomen and thigh. In individual operations some slight additional anesthesia is at times a necessity. Illyes, Braun, Narath and others have recommended that four cardinal punctures be made, one over each spermatic cord as it works its way over the pubes and one more on each side at a midpoint of the junction of scrotal and femoral integument. From these points a complete line of injection passes through the subcutaneous tissues about the entire scrotum. Operations upon the scrotum itself such as ablation are readily accomplished by this technic alone. Where we wish to do an operation on the testicles or cord, the cord itself must be picked up at the opening in the internal oblique and injected with a few c.c. of one per cent. neocaine. If a good injection around the cord is made fanwise it will usually accomplish the same purpose. Operations upon the cord may also be readily performed by the use of the hernia technic. This is a satisfactory method and keeps the anesthesia and the operative field quite well separated. The fact that most of the operations on the testicle, epididymis and cord are now done in the inguinal region renders anesthesia of this area of great import.

INJECTION TECHNIC

In the area of the inguinal canal we are concerned chiefly with two important nerves: The iliohypogastric and the ilioinguinal branches of the first lumbar trunk. With the exception of the lumbo inguinal nerve from the genitocrural, all others are branches of the first lumbar terminals. Any operation on the cord, such as varicocele, hydrocele of the cord, or adenectomy of the inguinal glands, may be performed by blocking the important nerves mentioned above.

Fig. 3.—Points for nerve blocks of scrotum and testes.

A number of rather complicated methods have been suggested for this area, none of which are necessary. We really think that many surgeons have been prejudiced against local anesthesia, by the injection methods of the originators of hernia technic.

Operators are divided in their opinions regarding skin wheals in these procedures; some use two and others use three. As a matter of fact it really depends on whether one is accustomed to the use of

a very long or medium length needle. The extremely long needles are more difficult to control and we prefer the medium type. Three wheals are made in our technic: The first about two fingers above and internal to the anterior superior spine of the ilium; the second at the pubes just over the cord. The third wheal is placed midway between the first and second and just below Poupart's ligament. From point one superficial and deep injections are made fanwise into the structures in the direction of the anterior superior iliac spine. The needle is usually first introduced in a vertical direction and the injections made straight down into the deeper layers, injecting as we go. The needle is then withdrawn and attempts made to infiltrate the layers of muscles in a fanwise direction toward the crest of the ilium. In order to accomplish this the position of the needle must be increasingly oblique and the tip of the needle should finally reach the crest of the ilium through each layer. Following this we perforate the external oblique aponeurosis and inject toward the external anterior superior iliac spine fanwise. From wheal number two we inject directly down into the pubes also in a fanwise direction. We then inject under the abdominal aponeurosis and into the inguinal canal. In some cases we actually inject the cord itself. From wheal number three we make fanwise injections towards wheals numbers one and two. From this point we also complete the anesthesia by injections subcutaneously and into the fascia, the fluid being diffused widely. It is general experience that it is usually necessary to inject about twenty-five to thirty c.c. of a one per cent. novocain solution in each punctured area to achieve a satisfactory result.

SUMMARY

1. Local or regional anesthesia is practicable in all parts of the urinary tract.
2. It is an absolute necessity in cases of reduced functional activity or urinary obstruction.
3. Its use requires considerable coöperation on the part of the patient and for this reason it is not well adapted to the nervous type or in children.
4. With careful administration there is practically no postoperative shock or signs of toxemia.
5. Last but by no means the least important is the fact that it lowers the postoperative mortality greatly indeed.

229 West 101st Street.

Strangulated Inguinal Hernia of the Urinary Bladder*

Report of Two Cases

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Case I.—J. V., admitted to the University Hospital May, 1921, aged fifty-four years, history of hernia all his life, strangulation about six hours. An immediate operation under general anesthesia, modified Halsted hernioplasty was performed. About three inches of ileum (dark in color yet viable) and entire bladder was found in the sac. The right inguinal hernia was cured after two years.

Case II.—J. P., admitted to the University Hospital September, 1921, aged fifty-two years, with history of hernia since childhood, strangulation about ten hours. Two distinct masses could be palpated, one in the scrotum and the other just beyond the external ring. A Ferguson operation was done. Almost the entire bladder was found in the scrotum. A diverticulum of the sigmoid was found adherent to the peritoneum which was pulled down through the external ring. This was resected, using a purse string suture to close the opening. The patient was discharged from the hospital on the twentieth day as cured but there developed a recurrence in six months. He has so far refused a second operation.

In these cases the hernia were strangulated in the sense that they were not reducible. The blood supply was not entirely strangulated. Hernia of the bladder is found rather frequently, some authors stating it to be found in one per cent. of all cases of hernia. In many of the inguinal hernias the bladder may be found protruding into the canal. Strangulation of the bladder is seldom seen. Because of the rarity and the possibilities of injury to the bladder in doing herniotomy I am reporting these two cases. Both cases were proved cases of bladder hernia by dissecting away the parietal peritoneum and tracing the ureter into the mass.

Watson in his recent work on hernia gives a detailed study of bladder hernia. He collected 406 cases of bladder hernia up to 1923. He finds it to occur twice as frequently in men as in women. This is probably due to the occurrence of bladder hernia so frequently in the inguinal canal and because inguinal hernia is more common in men than in women. His statistics show bladder hernia to occur in the inguinal canal in 280 cases, in the femoral canal seventy-nine cases. Other varieties were two of the perineal type, one obturator and five ventral. Of the cases of bladder hernia he reports fifty-nine of them to have been of the strangulated variety. Of these twenty-nine were paraperitoneal, eleven extraperitoneal and five intraperitoneal. In fourteen cases the variety was not given. The two cases reported above were of the extraperitoneal variety.

The mortality in the fifty-nine cases was about twenty per cent. This type of hernia may easily be overlooked and the bladder wall may be injured or mistaken for a thickened peritoneal sac, consequently serious complications with a more grave prognosis. Eggenberger found a mortality of forty per cent. where bladder injury was not recognized until after operation.

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The Value of Uranalysis in a General Examination Compared with the Blood Chemistry

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So much is constantly appearing in our medical journals upon every conceivable subject pertaining to medicine and surgery that one really should feel that one has a justification and a real message to impart when one takes up the pen to make a further contribution. Yet what I shall report in this brief article will not be new to many of the profession. The only purpose is to stimulate a great many more of our members to better, more accurate and exact work. This cannot be done by reading such an article as I am now writing, but by beginning to follow some of the methods suggested, and so to realize the great help and real pleasure that will come from a realization of the information gained in the individual case and the better conception of disease processes which from time to time will come under personal study. Great personal injustices are often done to patients because of an absence of study which is within the ability of every practitioner of medicine with the expenditure of but little time, and the reward is large in satisfaction to both patient and medical advisor when the effort is made. I will attempt to prove my hypothesis by adducing such points only from my case histories which bear directly upon the subject under discussion, and will not give the full histories in the cases cited.

Case I.—Mr. R. P., aged thirty, applied to a medical examiner for an examination for life insurance in May, 1924. Prior to his application he had been feeling fit and was in excellent health as far as he knew. Upon being examined, a trace of sugar was found in the urine. Nothing else was found which would prevent his acceptance by any insurance company. He was advised to go home and for one week abstain from candy and sugar and then to report for a second uranalysis. Since this showed a trace of sugar, he was advised that he had diabetes mellitus and was immediately placed upon a restricted diet. Beginning at this time he gradually began to lose weight and energy, and found it hard to perform his work. To add to his difficulties his only child, a son, became ill with pulmonary tuberculosis and was taken to a county hospital, the parents bravely undertaking to do a considerable share in his maintenance at a real sacrifice. The mother wished to go out to work but felt that she could not do so because of the oversight of her husband's dietory régime. The physician who examined the child was told of the father's supposed condition, examined the urine, confirmed the diagnosis and advised him to follow the diet as previously prescribed.

This patient called upon me on September 25, 1924, giving the history as outlined. The uranalysis showed a small quantity of sugar by Benedict's solution. A blood sugar examination, made upon the following morning after a fourteen hours' fast, showed a blood sugar content of .095 per cent. (normal .06-.12 per cent). Our patient was now advised to disregard the diet which he had been following, and to go upon a full general diet including sugar, candy, honey, bread, pie and cake, together with anything else that he might wish. At the end of another week, after a fourteen hour fast, the blood sugar examination showed a content of .0975 per cent. Here was clearly a case of renal diabetes, for which no concern need be felt. The wife has since gone to work, the father has been eating generally, and has gained in weight and efficiency. The family has regained its hope and happiness.

Case II.—Mr. L. S., called upon November 15, 1924, having been sent by the patient in Case I. This man had been examined for insurance and a trace of sugar had been found. He was advised to go for two weeks without candy or sugar, and again report. At the close of the two week period a slight reduction was present in Benedict's solution. A blood sugar estimation following a fourteen hours' fast showed .12 per cent. sugar, much to the relief of the patient. This, like the first, was a case with a low slop over point of the kidney.

Various skin conditions may have their bases in hyperglycemia with a sugar free urine. In proof of this statement I submit the following three cases:

Case III.—Mr. C. H. had had a recurring furunculosis. His physician had made repeated examinations of the urine for sugar without success. A blood sugar estimation showed .17 per cent. sugar to be present. Under diet with the Allen treatment all traces of cutaneous disturbance passed away and the blood sugar concentration fell to .10 per cent.

Case IV.—December 22, 1924, a man, J. Z., came to me. He was a sight to behold! His ears were covered with eczematous scabs, his face was covered with a dry eruption of eczema, both hands were raw upon the backs and the eruption of a dry type covered the arms. The itching was intense and very painful upon the raw places of the hands when the perspiration ran into them. He had seen seven other physicians within the past four weeks, with no benefit, and as a result was quite discouraged. The urinary analysis showed no albumin present, no sugar, no indican, and microscopically the urine was normal. His blood chemistry showed his urea nitrogen to be 20 mg., creatinine 1.5 mg. and sugar .17 per cent. His hemoglobin was 100 per cent. and Wassermann negative. The diagnosis was made of an eczema based upon a hyperglycemia. He was next seen five days after his carbohydrate intake had been restricted. All moist patches upon the hands had cleared up and healed over, the itching was much less and sleep was now possible. He was seen again December 31, 1924, and the appearance is much better than previously. The blood sugar today is .10 per cent.

Case V.—Dr. G. M. called upon me about three years ago with the request that I examine a sample of urine for sugar. This I gladly did and found none. Then he informed me that it was thus always

—that he had had it examined or had examined it himself in all about nine times, and no sugar had ever been found, but nevertheless, that he had suspected that there might be some diabetic trouble. I suggested a blood sugar examination and this showed a hyperglycemia of .17 per cent. He restricted his carbohydrate intake and reported in two weeks. The blood sugar content was now .14 per cent. but a troublesome low grade eczema which had been troubling him for some time had disappeared within the two weeks. This patient afterwards went to the Battle Creek Sanitarium to have his carbohydrate tolerance established, where the diagnosis of diabetes mellitus was confirmed. He has since had gangrene of the thumb.

Case VI.—July 4, 1921, R. C., aged fifty-three, usual weight 175 pounds, present weight 156, complained that for the past year he had been gradually losing weight and was constantly tired and indisposed to work. No complaint of craving for sweets, polyuria or polydipsia, was made. His uranalysis showed no albumin, no sugar, no indican, and nothing abnormal under the microscope. His functional phenolphthalein test gave 68 per cent. in 2′ 10″. His blood gave a negative Wassermann, and the chemistry gave urea nitrogen 28 mg., creatinine 2.2 mg., and the blood sugar was .175 per cent. The diagnosis was mild masked diabetes mellitus, masked nephritis, together with a general toxemia. This patient reported in a short time that he was feeling a great deal better and had gained considerably in weight under a restricted carbohydrate diet. In glancing over these cases the fact stands out that the blood sugar content has been about .17 per cent. in all. Possibly had the blood sugar been more, the urinary sugar would have soon appeared since .17 per cent. is the average threshold point, or in other words it is the concentration attained in the blood before the sugar begins to be excreted by the kidney, and glycosuria to appear. In Cases I and II we have kidneys with slop over points lower than the average, and hence our renal diabetes.

Aside from the diagnosis of masked diabetes mellitus, for the estimation of the improvement of our patients from time to time, the examination of the blood sugar offers an avenue of information which is superior to all other methods and in comparison to which the uranalysis holds a secondary place, sometimes giving us no data, when there is no glycosuria.

The blood chemistry holds a superior position when compared to the urinalysis in the diagnosis of the nephritides, the functional activity of the kidneys and in the prognosis of our cases. An interesting case has recently been under my observation from which we may make the deduction that we may have a frank nephritis but with little impairment of the functions of the organs as shown by the chemistry of the blood.

Case VII.—Mrs. E. M. S., aged thirty-eight, weight, present 128, normal 128; white, American, with one living child—no miscarriages. This patient called because of a troublesome urticaria. Her family history was negative except that one brother had died of diabetes mellitus. I will not go into the case extensively except to draw upon the points which I wish to emphasize. In addition to the urticaria, dermographia was present. The uranalysis showed albumin to be present in a marked amount. No sugar, indican was very heavy and under the microscope numerous hyaline casts were found to be present. The Wassermann test was negative, the hemoglobin was 100 per cent. (Dare), and the chemistry of the blood showed urea nitrogen 17.6125 mg., creatinine 1.5 mg. and blood sugar .09 per cent.

The diagnosis was urticaria and kidney irritation due to an intestinal toxemia. The kidney condition is possibly the result of toxines which were simultaneously affecting the skin, but as yet the kidneys were not greatly impaired. Only by a chemistry of the blood could such a conclusion be made. This patient had taken excellent care of herself. Her teeth had been x rayed every three months for an extended period, and she has been under the care of several good physicians on the Pacific Coast before coming East.

Upon the other hand, we may find patients whose urine is normal but who have an impaired kidney condition as shown by the blood chemistry, and which I am pleased to call masked nephritis. This condition is much more prevalent than masked diabetes mellitus but as easily detected by the chemistry of the blood. I have the histories of a great many patients of this masked nephritic type, but I will select only one from this group which will illustrate the point very well.

Case VIII.—Mrs. A. E. S. called upon me on March 11, 1922, complaining of swelling of the lower limbs at bedtime daily. Examination showed that the heart was not enlarged—the sounds were normal, the pulse was 75, regular, of good tension, with a blood pressure of 145/75. Her functional kidney test gave 60.6 per cent. in 2′ 10″. Her uranalysis was as follows: Amount in twenty-four hours 3100 c c., no albumin, sugar or indican, microscopically negative. Her blood chemistry was as follows: uric acid 7.0 mg., urea nitrogen 23.35 mg., creatinine 2.56 mg., chlorides .53 per cent., and sugar .11 per cent. The diagnosis was masked nephritis, based upon the polyuria and the blood chemical findings which showed a retention of everything except the sugar content. This beautifully illustrates a condition frequently seen in which there is no acute irritation of the kidney as shown by an absence of albumin and casts, but a renal insufficiency due to a definite organic change in the organ as shown by the excessive creatinine content above normal.

The technic of making the examination for urea nitrogen, nonprotein, urea, creatinine, chlorides and sugar in the blood, can easily be mastered by any physician who cares to undertake the work. The modern textbooks will give sufficient information so that they may be worked out, and some of the analyses may be done in a few minutes. All that is necessary is a few chemicals and the proper glassware.

CONCLUSIONS

That the economic loss in some families from a mistaken diagnosis may be great as in Case I. That the examination of the urine alone, while many times giving valuable information, is at other times misleading, deceptive and bound to work injustice to many patients. That to wait for another physician to make the blood examination may be compromising. That all cases of skin affections should have

the blood chemistry examination—especially for blood sugar. That all general examinations are incomplete unless accompanied by a complete blood examination including its chemistry. That many cases of socalled diabetes insipidus may be cases of diabetes mellitus. That life insurance companies should follow up all cases of glycosuria with a blood chemistry both for their own sakes and in justice to their applicants. That the diagnosis, prognosis and course of some diseases, notably diabetes mellitus, nephritis and gout, are much more accurately gauged by the blood chemistry than by the uranalysis which, at times, is worse than useless by its misleading findings. That masked nephritis and masked diabetes mellitus can be diagnosed by blood chemistry. That the progress of the nephritic may be watched with the same satisfaction as that of the diabetic especially by watching the urea nitrogen. The creatinine findings are more indicative of structural changes in the kidney than of progress made by treatment.

The Diagnosis of Surgical Diseases of the Urinary Organs*

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The cystourethroscopic examination of the urinary organs together with laboratory and x ray findings will enable us to diagnose early and accurately all of the socalled surgical diseases of the urinary tract. Notwithstanding this, however, most of these cases reach the stage where their lesions are advanced and much damage has been done requiring extensive surgical interference for their alleviation before the true condition is recognized. This is largely due to too much reliance being placed on internal urinary antiseptics, long continued bladder irrigations, or similar treatment. The procedure for making an early accurate diagnosis is time consuming, expensive, and it may be unpleasant, yet ineffectual treatment and invalidism are much more costly and disagreeable.

The need for careful urological diagnosis is proclaimed over and over again by that large army of patients who have been diagnosed and treated for some abdominal condition, operated and reoperated upon without relief, later to be found with the pathological condition in the urinary tract, also those who have their urinary chills interpreted as malaria and treated with quinine and trips to the mountains season after season. Over fifty per cent. of the patients with right sided renal and ureteral lesions diagnosed at the Mayo Clinic have had one or more futile abdominal operations performed. Ninety per cent. of the urinary calculi in my own practice have at some time since the history of the symptoms began which led to a diagnosis of stone been treated for malaria, and practically all of them have taken urinary antiseptics at one time or another to clear up their urine.

The physical examination is often negative in lesions of the genitourinary tract. However, a general examination to rule out tuberculosis, diseased heart, tumor metastases, and other conditions, is important. In the kidney region, tenderness and rigidity on palpation as well as tenderness on deep percussion are the chief signs looked for, remembering that the normal kidney is seldom palpated even in the thinnest abdomen. By abdominal, rectal and vaginal palpation, much can be learned about the bladder. The lower ends of the ureters are palpable in the female and I have had three cases where ureteral stones could be felt. In the male the prostate must be looked into and properly diagnosed as to the degree and character of enlargement and the obstruction to the urinary flow caused by the enlargement.

Each case presenting has a tentative diagnosis made by obtaining information of the present and past history, a complete physical examination, a complete urine examination, using one of the multiple glass tests, noting residual urine if present, bladder capacity and tone, the making of necessary smears and their microscopical examination, rectal palpation of prostate and seminal vesicles with a microscopical examination of their secretions, examination of urethra for possible stricture, then a systematic cystourethroscopic examination with x ray collaboration.

With the proper use of the x ray and cystourethroscope almost all urinary lesions can now be early and accurately diagnosed. Therefore fewer extensive surgical procedures are necessary and fewer malignant diseases are engrafted upon primarily benign lesions.

X rays are only indirect evidence, and their findings are gross and not microscopic; on the other hand cystourethroscopic procedure alone is only of value in locating lesions in the bladder and urethra, for collecting urine from each kidney for analysis, culture or functional test, or for instrumentation or topical treatment to locate pathology in the urinary tract. Therefore it is necessary to combine both röntgenographic and cystourethroscopic examinations as either alone is of relative little value.

When the preliminary röntgenogram is negative, all the cystourethroscopic data possible should be collected before further röntgenograms are made. Our routine technic for cystourethroscopic examination is as follows: 1. A thorough exploration of the bladder wall, remembering that most all bladder pathology is in the lower quadrant; 2, a study of the appearance of the sphincter muscle; 3, examination of the posterior urethra; 4, the ureteral orifices are inspected for size, shape, patulence and evidence of inflammation noting the efflux from each; 5, catheterizing each ureter, using lead catheters, determining the presence or absence of obstruction due to stone, stricture, tumor or kinking; 6, the collection of sufficient amount of urine for laboratory examination from each ureter; and 7, a differential functional test, for this I use phenolsulphonephthalein and find it extremely satisfactory.

From this point on the technic is entirely dependent

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on the individual case, and varies considerably. If pyelography is to be done, the appearance time of the phenolsulphonephthalein is carefully noted, if synchronous and within normal limits a small amount of urine is collected for a limited period. During this time the preliminary röntgenograms are made. If the usual difficulty of one catheter or the other refusing to flow cannot be overcome and there is evidence of complete inhibition of kidney function, no injection of pyelographic medium is made on that side. If this inhibition is due, however, to an obvious pathological condition, pyelography is done, your own judgment being the guiding factor.

Eighty-five per cent. of all stones will show in the röntgenogram without pyelographic solution in the pelvis of the kidney or ureter. Having lead catheters in the ureters facilitates greatly the reading of the röntgenogram in these cases. The fifteen per cent. of stones not visible in the film can often be discovered by passing a wax tipped catheter and noting the scratches thereon when the catheter is withdrawn. Even a large stone which does not cast a shadow in the röntgenogram will often show a thinning out of the pyelographic shadow at that point where the stone lies.

The appearance of stone presented with the cystourethroscope is striking and characteristic, and it is now conceded that no diagnosis of stone is accurate without cystoscopic confirmation, the reason being that direct visuality has less room for fallacy than any other method of diagnosis. The cystoscopist must be careful that his instrument does not run in under the stone or stones, the stones being large enough to be held up by the cystourethroscope are thus out of the field of vision. In cases where urinary obstruction is met with in the urinary outflow, thus bringing the detrusor muscles into increased action causing a diverticulum or diverticula and the stone lodges and enlarges within a diverticulum of the bladder wall, the cystourethroscope is of inestimable value in clearing up the diagnosis. Trabeculation of the bladder wall is also caused by incoordination of the detrusor muscles and the vesical sphincter, this being an early sign of cerebrospinal syphilis. It is marked on the anterior wall and may be accompanied by a relaxed spincture outlet.

Stricture of the ureter is best diagnosed by the röntgenogram, having the ureter distended with pyelographic solution, making the diagnosis of stricture when distortion of the ureter occurs in varying degree. This is quite a common condition in women and Morrissey finds stricture of the ureter frequently in the male and believes the condition to be due to focal infection.

In all but the most simple cases of hematuria you must use instruments of precision to make an accurate diagnosis. Sixty-four per cent. of Chute's cases were due to new growths in the urinary tract. Kretchmer claims that hematuria, with few exceptions, means the presence of organic disease in the urinary tract. The bleeding point may be in the posterior urethra or adnexa and draining back into the bladder; it may be from the bladder wall itself or some growth attached to the bladder wall; or it may be from above—the ureters and kidneys. In any case it is imperative that a cystourethroscopic examination be made while the hemorrhage is present, thus facilitating the ready location of the bleeding point. The diagnosis of idiopathic hematuria should never be made only after autopsy has failed to reveal the cause of the hemorrhage. True hemorrhage may be differentiated from hemoglobinuria by the use of the microscope.

Eight per cent. of all tumors of the body are found in the urinary tract. In almost all cases their first symptom is hematuria. This hemorrhage may be either initial, total or terminal, but comes on suddenly in the majority of cases. It may be either intermittent or constant, may continue for days, weeks, or months in spite of any or all palliative treatment; or may cease as abruptly as it began. Here the cystourethroscope will clear up the diagnosis at once, making an examination as soon after the hemorrhage is first noted as possible. To one experienced in interpreting pyelograms, diagnosis of small and early renal tumors can be made, and operative treatment instituted before metastasis has occurred. In tumors of the carcinomatous type operation and radium are the procedure as diathermy proves futile in these cases, serving only to delay until the patient is in such physical condition that operative measures cannot be undertaken.

The treatment of tumors of the bladder and posterior urethra other than those of the carcinomatous type is diathermy. This procedure can be carried on in any well equipped urological office. The only preparatory or aftertreatment required is some internal treatment to render the urine aseptic. The number of treatments vary according to the condition of the individual case at hand.

An early diagnosis and proper treatment of renal tuberculosis is of extreme importance. The characteristic symptoms are: age twenty to thirty, urinary frequency both diurnal and nocturnal, hematuria present in seventy-three per cent. of the cases, loss of weight, fever and pain as late symptoms. Renal tuberculosis is always secondary, therefore delay in making your diagnosis and removing the infected kidney usually results in a bilateral involvement.

In the posterior urethra the cystourethroscopic picture is for the most part reflecting true pathology lying beneath, be it prostatitis, vesiculitis, enlargement of the prostatic lateral lobes either into the bladder or posterior urethra, enlargement of the middle lobe of the prostate, or enlargement of the subcervical group of glands or glands of Albarran, or any combination of these. When the enlargement of the middle lobe of the prostate or the subcervical group of glands is the cause of the urinary disturbance, they can easily be fulgurated through the cystourethroscope, and in some cases complete relief of the patient's symptoms is obtainable, which will last for several years throughout the patient's life. Most patients have to be operated upon, but the cystourethroscope is the means of accurate diagnosis.

CONCLUSIONS

A brief paper such as this naturally is inadequate in covering the field of urological diagnosis. Its chief object is a plea for any early recognition of lesions of the urinary tract. The methods outlined are time consuming and expensive, but ineffectual treatment based on an incomplete diagnosis is far more costly and disagreeable. The importance of early and accurate diagnosis is apparent.

The Problem of Forcing Fluids for Infections of the Urinary Tract

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There are a number of pathological conditions wherein it seems imperative to force fluids in quantities out of all proportion to the patient's willingness, and in many cases ability, to imbibe them. Common among these are infections of the urinary tract in its several parts—pyelitis, ureteritis, cystitis, and urethritis.

While there are several methods of treating these infections, such as irrigations, instillations of bactericides, change in the reaction of the urine, cathartics, the drug hexamethylenamine, rest and diet including the usual prohibition of the condiments, the importance of large quantities of fluids cannot be overestimated.

Yet patients are either careless of the injunction to drink large quantities of water or they very soon tire of obeying it; besides, to many patients large quantities of water as interpreted by them are too meagre to be of any real use. Indeed, there is often a limit to the amount of fluid that even a skillful nurse can persuade the patient to drink, a limit often far below what seems a minimum for any therapeutical value. Add to these drawbacks the fact that whether a patient is willing or unwilling, water, in unusual quantities, becomes in time repulsive, and the problem of forcing fluids seems a grave one.

There are, of course, several methods of forcing fluids other than directly by mouth. These are even less satisfactory, however. There is the Murphy drip method, but this often fails because the fluid is partially expelled before it can be absorbed. There is hypodermoclysis which is rather cruel treatment and soon reaches its limits. There is the method of infusion which is not satisfactory because of the risk of injecting bacteria or air emboli into the bloodstream. And there is the method of directly flushing the lower urinary tract including the pelvis of the kidney through catheterization, but it is always resorted to with great hesitation for fear of traumatizing the mucous membrane; besides, considering the risk and the amount of work involved, rarely does enough water reach the urinary tract to make this method of treatment seem worth while. And so we are face to face with the problem of how to give patients suffering from infections of the urinary tract more fluids by mouth.

Ever since 1908, when Einhorn first used the duodenal tube for alimentation in the treatment of gastric ulcerations, its use has gradually been extended to many other pathological conditions, both surgical and medical, including the forcing of fluids in cases of thromboangitis obliterans.

Would it not seem wise further to extend the use of the duodenal tube for forcing fluids by mouth in cases of infections of the urinary tract? Would it not seem that the duodenal tube is an adjunct, in any therapeutics requiring large quantities of fluid, the value of which cannot be overestimated?

After the duodenal tube has been passed Ringer's solution or tap water can be given through it by means of a Murphy drip at the rate of forty to fifty drops a minute. The amount which the writer has seen given in cases of thromboangitis obliterans was, at first, about 300 c.c. three times a day. This was gradually increased in some cases to 1500 c.c. every three hours six times a day.

Contraindications to the larger amounts were vomiting and a diarrhea which could not be controlled by bismuth subnitrate or by diet. In either case the amount of fluid was then reduced. However, it was usually found that very large quantities of fluid could be given after a few days of treatment without untoward effects.

The greatest difficulty in the entire course of treatment comes in getting the duodenal tube in place. This difficulty is well worth while, however, considering the importance of the result.

Whereas a nurse is quite competent to administer the tube, it is often excellent policy on the part of the physician to do it, or at least to be at hand for the assurance his presence will give the patient.

The tube is best given by the Lyons method which is comparatively easy and quick. Lyons gives the tube in the morning on a fasting stomach rather than at night as is Einhorn's practice. It is swallowed to the 55 cm. mark, thus getting the bucket into the stomach. A small glass of water is then given, the patient is placed on the right side, the head lowered and the hips raised on pillows. The patient is now encouraged to make slow swallowing movements until the 75 cm. mark has been reached. It will usually be found that the tube is in place in the duodenum in from twenty to forty minutes. In order to find out whether this is so a small amount of fluid should be aspirated through the tube and tested with litmus paper. If the reaction is alkaline it is usually a sign that the bucket is in the duodenum, but an acid reaction usually signifies that the bucket has not yet passed the pylorus. If the bucket is not in the duodenum the patient should be kept on the right side until it is.

In all cases the amount of the fluid given each day and the length of the treatment should be regulated according to clinical symptoms.

While treatment by means of the duodenal tube may at first seem somewhat heroic, it should be remembered, in the first place, that this appears the only satisfactory method for the administration of fluids in large quantities. Besides, once the tube is *in situ,* it can be allowed to remain thus for days, or if it is removed there is rarely any difficulty in the taking or giving it again.

SUMMARY AND CONCLUSIONS

1. In cases of infection of the urinary tract, from the pelvis of the kidney through the urethra, fluids in large amounts are indicated, yet are usually difficult to give.

2. The duodenal tube, it seems, can be used to do away with this difficulty.

Practical Therapeutics

THE THERAPEUTIC RELATIONSHIP OF DIGITALIS AND STROPHANTHUS*

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(*Concluded from volume cxxi, page 754*)

PARTICULAR THERAPEUTIC USES OF DIGITALIS AND STROPHANTHIN

It has long been known that digitalis has an almost specific action in the treatment of heart failure associated with auricular fibrillation. In this condition the irregularity of the ventricular action is rectified with resultant great improvement in the circulation. Digitalis brings about this rectification of the heart's action apparently by reducing conductivity at the auriculoventricular bridge so as to block unnecessary and disturbing impulses which come to the ventricles, and perhaps also by breaking up a "circus rhythm." Also, by slowing the conduction time between the auricles and ventricles it favors filling of the left ventricle, which is of special advantage in mitral stenosis. In auricular flutter it may similarly improve the circulation by reducing conduction; it may first change the flutter into fibrillation.

Has digitalis any value in the treatment of heart failure occurring in conditions other than those associated with auricular fibrillation and flutter? Is the correction of an arrhythmia which functionally impedes the ventricular action its only beneficial effect? Thomas Lewis answers as follows: "The chief value of digitalis lies in its power to control the ventricular rate when fibrillation of the auricles has come. . . . A chief cause of the rapid heart action when heart failure threatens or has come, is fibrillation of the auricles, and it is in this condition that digitalis acts so beneficially; it reduces and holds the rate within normal bounds. The reduction of accelerated ventricular rate is the only important action of the drug of which we have knowledge. There are few if any instances of which we know with certainty, in which digitalis acts beneficially except cases of accelerated action; there are few cases of acceleration in which the drug produces unquestionable benefit apart from those provoked by fibrillation of the auricles. . . . Those who regard digitalis as a cardiac tonic mistake its character; its chief action is to slow the heart" (13). And James Mackenzie agrees with Lewis in the following words: "It is to be observed that such a reaction (slowing of the heart produced by digitalis) rarely occurs in conditions other than auricular flutter and fibrillation. . . . As a rule, digitalis has little or no effect on hearts with normal rhythm. So far it seems that the beneficial effects which result from digitalis are not due to any other cause than the mere slowing of the heart rate" (14).

The therapeutic indications of strophanthus are more extensive than those of digitalis, the limitation of the latter, as laid down above, being accepted. They include all conditions where heart failure is due to or complicated by intrinsic weakness of the heart muscle, that is, by diminished tonicity or contractile energy; and they parallel the digitalis indication to produce therapeutic heart block in auricular fibrillation and flutter. It may be that the power of strophanthus to depress conductivity is generally less than that of digitalis, but it acts better than digitalis in cases of auricular fibrillation with much loss of tonicity of the ventricles, as Vaquez pointed out.

In actual or threatened loss of tonicity from myocardial weakness occurring in the acute infections strophanthus is indicated. In pneumonia the author has used and recommended it as the preferred heart stimulant for many years (15). In these acute infections, where the blood pressure is usually low, strophanthus has the special advantage of not stimulating the vagus.

In chronic myocardial degeneration with heart failure strophanthus can be used to increase the strength of the cardiac contractions, the dose being graduated according to the needs of the case. When given in place of digitalis for a heart blocking effect in auricular fibrillation with much loss of tonicity, full doses may be required. In any case of pathological dilatation strophanthus is the most effective drug that we have.

Great care must be taken in giving strophanthus after a strong course of digitalis, as it can precipitate digitalis poisoning; but if given before a course of digitalis it is not likely to prove thus dangerous, being quickly eliminated or destroyed.

The teaching that digitalis is essentially a regulator of the heart's action, that is, of the rhythm and rate of the heart's action, while strophanthus is a direct heart stimulant, that is, a strengthener of myocardial contractions by direct and exclusive action on the heart muscle to increase tonicity and contractility, gives us an explanation of the difference in effect of these drugs which was observed clinically and throws light on their therapeutic relationships.

*Read before the American Therapeutic Society, Atlantic City, N. J., May 22, 1925.

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ALPHA-LOBELIN IN THE TREATMENT OF ASPHYXIA NEONATORUM

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On account of the many incidents during labor the newborn is not infrequently threatened with asphyxia which, unfortunately, does not always respond to the usually employed methods of treatment. In fact some of these result in actual damage to the patient. Rupture and displacement of the delicate organs have resulted from too vigorous manual methods and insufflation pneumonia is an embarrassing sequel.

The indirect stimulation of respiration, as a secondary result of the treatment administered, has in the past constituted the chief difficulty in meeting this condition satisfactorily. In view of these facts, the discovery of an agent acting specifically and promptly as a stimulant to the respiratory centre will doubtless arouse great interest in the medical profession and also mark a new epoch in scientific drug therapy.

Such an agent has been found in alpha-lobelin. Extensive laboratory and clinical experiments have demonstrated beyond doubt its value as a direct respiratory stimulant acting without influence upon other physiological functions.

The following are typical indications for and results obtained by the use of alpha-lobelin.

1. Maternal dystocia due to kyphotic pelvis; symphysiotomy and forceps delivery; marked asphyxia neonatorum livida; irritation of the throat showing reflexes absent; insufflation without effect. Within thirty seconds after the injection of one twentieth grain alpha-lobelin respiration was fully established and continued.

2. Fetal dystocia due to compound presentation (hand and head); hand pushed back and flexion of head restored; forceps delivery; asphyxia neonatorum pallida. Hypodermic injection of one twentieth grain alpha-lobelin resulted in superficial and arrhythmic respiration; one half the dose was therefore repeated ten minutes later. Result: normal breathing established and maintained. As the seriousness of the case suggested the additional use of a diffusible stimulant, whiskey was administered by hypodermic injections in the emergency.

3. Fetal dystocia: prolapse of cord. Asphyxia neonatorum livida responded promptly to a single injection of one twentieth grain alpha-lobelin. No further treatment was necessary.

I might also state that I had occasion to observe the vital effect of alpha-lobelin in two cases of veronal poisoning caused by overdoses. As the symptoms indicated full assimilation of the drug, lavage would have been useless and therefore was omitted. The patients were moderately cyanosed and respiration was very slow and superficial. Both received three intramuscular injections of one sixth grain alpha-lobelin in hourly intervals, and after a prolonged sleep (fourteen to sixteen hours respectively) they awoke without any apparent aftereffect of the veronal overdose.

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Heliotherapy.—R. Plato Schwartz (*Boston Medical and Surgical Journal,* August 7, 1924) thus summarizes his opinions:

1. Thirty-three years have not produced universal confidence in the use of tuberculin in the treatment of any form of tuberculosis.

2. Heliotherapy has clinically proved the indications for its use on the basis of the general changes in the patient, the prevention of deformity, and the restoration of function in the affected joint, providing fundamental orthopedic requirements are met.

3. High altitudes have certain advantages but excellent results are being obtained at the seashore; at either level clean clear air is a necessity.

4. Systematic graduated exposure of the entire body, except the head, with careful observation of each patient as the period and extent of insulation is increased, seem to be of fundamental importance in any serious attempt at heliotherapy.

5. Clinical observations and laboratory investigations, at present, favor the opinion that the therapeutic value of the solar spectrum is not due to the effect of any one region; but is more the result of the combined effect of the entire spectrum.

6. Artificial sources of light are to be regarded with suspicion until it is proved that they reproduce the solar spectrum in extent and intensity.

7. The local lesion in the bone or joint should be completely immobilized during the acute stage, apparatus is indicated but should not interfere with insolation. Sinuses and ulcers should be unbandaged twelve hours each day and subsequent treatment should favor the restoration of function.

8. Surgery must be looked upon as occasionally essential in the conservative attitude toward treatment of osteoarticular tuberculosis, but to use it wisely requires a knowledge of when conservative measures have reached their full potentiality.

Spinacin, a New Protein from Spinach Leaves.—Albert Charles Chibnall (*Journal of Biological Chemistry,* September, 1924) describes the ether method by which a new protein, "spinacin," was prepared from the cytoplasm of spinach leaves. It was found to be insoluble in water and salt solution, but was soluble in a very small excess of either acid or alkali. It contained 16.25 per cent. N., and was free from CH.

Historical Medicine

Fifty Years in the Practice of Medicine*

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The progress and development, during the last fifty years, in every department of business and science has been unexampled in any similar period of the world's history. The telephone, the application of electricity to transportation, lighting, heating, scientific and mechanical arts were then unknown.

Coal oil for lighting had but recently come into use. The employment of gasoline for promotion and propulsion was a consideration for the future. The wireless, the radio, radium, and the employment of the various forms of light were yet uncovered in the land of dreams.

When the physician contemplates the discoveries, now considered necessities, in other lines of human endeavor, he is constrained to ask himself, whether his own profession has kept apace with such steps of progress.

On the fifth of July, 1871, I entered the office of the leading surgeon of my native town, Newark, Ohio, to read medicine for a year, as was then the custom, preliminary to study in a medical college. I found but one medical book later than 1848, the year of my preceptor's graduation. As I had no ambition to qualify as an antiquarian, nor no desire then to lay a basis by which to determine the progress in medicine, I immediately invested in the latest textbooks. My acquisition of medical lore, outside that obtained from my books, was scant. I had an opportunity to hold a child undergoing the operation of tracheotomy, without anesthetic, for the removal of a grain of corn from the trachea. This operation was performed by the noted surgeon, W. D. Hamilton, of Columbus, Ohio.

The latter part of August, 1872, I came to Philadelphia to attend lectures. It was my first visit to a large city. I found it paved with cobblestones, its traffic was in horsedrawn cars and the boarding houses were neither palatial nor inviting. The water for drinking and bathing was pumped and supplied directly from the Schuylkill River, which was the drainage canal for the cities upstream, and as the cemeteries within the city limits lined the banks on either side it might be truly said that its citizens acknowledged the virtues of their living ancestors and drank those of the dead. Frequently upon drawing a bath, the indulger would debate whether he would be as clean after as before he had taken it.

The course of instruction in the medical college consisted of lectures given to the two classes in common. The second year a repetition in all but the chair of practice, whose occupant covered the subject in two years. The observing student of the second year knew just how each subject would be presented, even to the time for the introduction of the jokes. The only laboratory was the dissecting room, upon which neither prolonged nor systematic attendance was obligatory. Both the ambitious student and the one who dreaded the final examination depended largely upon extramural teaching for instruction. Among the teachers our oldest Fellow, W. W. Keen, was the most noted, and his Philadelphia School of Anatomy was highly appreciated and well patronized by the students of both Jefferson and the University. The former institution, which I attended, numbered in its faculty some of the most noted members of the profession. Its professor of anatomy, Joseph Pancoast, of whom student tradition said he could operate successfully for conditions where the patients were sure to die in the hands of others, would say to his classes, "Gentlemen, I can't tell you why it is, but when I wash a wound with a solution of bichloride of mercury, it heals by first intention."

The professor of surgery, then sixty-seven years old, commended laudable pus, decried the aspirator and discarded the Esmarch bandage. The most of the surgeons of that day prided themselves on their ability to operate without soiling their cuffs, and carefully washed their hands after, rather than before operating.

The professor of obstetrics was cleanly. He persistently urged careful washing of the hands before examination of the patient, but as the latter, and the introduction of the catheter, were to be done without exposure of the genitalia, the purpose of the cleanliness might be considered to have been defeated. In diseases of women, the examination of the genital tract was digital, without exposure, followed by the introduction of a tubular speculum around the external end of which the enveloping sheet was carefully drawn. The next step was the introduction of the sound, and if this instrument was not properly curved, he would bend it with his teeth. When expressions of disgust were made by the students, he would impress them with the necessity of having the instrument so clean that they need not hesitate to put it into their mouths. Today we would question its fitness for use after the physician had removed it from his mouth.

The chair of practice was newly occupied by Professor J. M. DaCosta, who began those marvellous clinics on diagnosis which made his name renowned and respected the world over.

The professor of materia medica, John Biddle, would be popular with many today, as he advocated alcohol as a specific in typhoid fever.

The candidate for graduation was expected to have spent three years in the study of medicine, the first year in the office of a preceptor and two courses of lectures, each six months in length. But one examination was required and that at the end of the second year in college. This examination was oral, and although the students were in a panic when the period for it had arrived, it was easy to pass and difficult to fail.

*Read before the College of Physicians, Philadelphia, April 1, 1925.

Some graduates, realizing their incompetence to trifle with life, sought hospital experience. Through the intervention of R. J. Levis I secured the position of official substitute (a new position) to the Philadelphia Hospital. An examination of the candidates for interns was required before a committee of the staff, but the report carried no weight against political pull. The nurses were more intelligent paupers, or more frequently less intelligent, who had political influence.

In spite of these handicaps, the institution afforded a wonderful field for observation. No glimmerings of aseptic or antiseptic measures had apparently yet reached the members of its staff, at least not enough to affect their practice.

It is true that Lister had practised antiseptic surgery with marvellous results. White in 1891 quotes Lister's experience in Glasgow in 1864-66, when under nonantiseptic methods his mortality was 45.7 per cent. and contrasts this with his work in Edinburgh, 1871-78, where in 553 grave cases, the mortality from septic diseases was but 0.36 per cent., while Spence in the same hospital who declined to practise antiseptic methods had a mortality from sepsis of 2.4 per cent., eight times that of Lister.

What opportunities were dawning for practitioners of surgery? Is it surprising, however, that American surgeons should have been slow in the adoption of methods which were discountenanced, and the results doubted, by the immediate confrères of their advocate? As usual, truth, sooner or later, prevails and the surgeons of the entire world were the gainers by the courage and persistence of one man. Every department of surgery was enriched and made safer by the practice of antisepsis and its subsequent simplification, in asepsis. Compound fractures, gunshot injuries, and hospital gangrene were no longer the dread of surgery.

It is interesting to observe how the same, or similar ideas impress workers in different parts of the world. Thus, in 1872 Battey in this country, Tait in England, and Hegar in Germany advocated the removal of the ovaries but each for a different reason. Battey to bring about cessation of menstruation when the function was attended with such pain as completely to incapacitate the individual for the enjoyment of life; Tait, where the tubes and ovaries were the seat of severe inflammatory and purulent conditions; and Hegar, to establish the menopause in severe hemorrhages occasioned by submucous myomata. Experience had disclosed that the occurrence of the menopause was not only followed by cessation of the uterine hemorrhage, but also by recession of the growths.

The greater safety afforded all operative procedures through the practice of asepsis led to an epidemic of surgery. Some questioned whether the future of the race was not imperilled through the frequency with which the ovaries were removed and a female surgeon advocated the removal of the male analogues where the possessor had specific disease, but this suggestion was not enthusiatically received.

Emmet added impetus to the wave of gynecic surgery in 1874, by his description of the operation he had devised for laceration of the cervix, called trachelorraphy, which he had been practising for twelve years and had, at that time, performed some two hundred times. He was heard to assert that had he supposed that it would be so frequently and unwisely performed he would have hesitated to make it known.

Appendectomy, truly an American operation, having been first performed by Willard Parker, of New York, in 1848, subsequently frequently performed by Morton, Keen, White and others, remained to our Fellow and confrère, John B. Deaver, to render fashionable and a source of revenue.

Regions of the body, which were considered outside the possibility of successful invasion, as the cerebral, spinal and chest, have become legitimate fields for investigation and treatment.

The removal of large ovarian tumors, denominated ovariotomy, is another American operation. It was first performed by McDowell, of Danville, Ky., in 1809, and after several operations by him fell into disuse until revived near the same time in 1844 by Atlee, of Pennsylvania; Dunlap, of Ohio, and Clay, of England.

Atlee bore an unprecedented onslaught of denouncement and criticism, but courageously and persistently continued his course, and lived to see ovariotomy accepted as a legitimate procedure the world over.

It has been estimated that Spencer Wells, of England, through the performance of this one procedure has added many thousands of years to the life of woman.

I had a practical application of the relation of sepsis to childbed fever, then known as puerperal fever. I had passed from the surgical service, where I had a number of cases of erysipelas, directly to the obstetrical wards, and my advent was followed by an outbreak of infection, called puerperal fever. I well remember the days and nights in attendance upon these victims and my sense of discouragement and depression when in April, 1875, three children were left motherless by the death of two women. Here, again, asepsis, the outgrowth of the tide which Lister had set in motion, led to the recognition of this disease as a result of infection and demonstrated the means by which it could be avoided. Then the hospital was the dread of the parturient woman, now it is her greatest safety.

From time immemorial, Cæsarean section had been recognized as an occasionally necessary method of delivery. In the early eighties, however, it was shown that a woman could be delivered by the horn of a cow with less mortality than by the knife of the average surgeon. The British obstetricians and their American followers resorted in all doubtful cases, where the dimensions of the pelvis would permit, to the destruction of the child by embryotomy. One general practitioner of Philadelphia laid claim to the credit of nineteen craniotomies.

I was so impressed with the need that the unborn child should have *its* chance for life, that I prepared and read a paper before the Philadelphia County Medical Society, February 14, 1883, on "Is Craniotomy Justifiable?" in which I asserted there were measures affording the child a chance for life which could be safely employed for the mother. Oettler, in 1870, had reported a woman living, who had undergone four deliveries by Cæsarean section between 1853 and 1863. Charles D. Meiggs, in refusing to

perform a third craniotomy for Mrs. Roelof, was instrumental in securing for her two children by successive Cæsarean sections, and she in her riper years had the comfort of seven grandchildren. The mortality was generally regarded as equalling thirty per cent. This was because the obstetrician of that day was influenced by the dictum "meddlesome midwifery is bad," and allowed his patient to exhaust her forces and become infected by repeated examinations and efforts at manual delivery, before the Cæsarean operation was employed. I insisted that the attendant should know in advance of the expected labor, the size and condition of his patient's pelvis, be prepared promptly to employ the proper means of delivery, avoiding the deleterious procedures and thus afford justice to mother and child. I closed the paper with the assertion, "The obstetrician should control events, not be controlled by them."

My suggestions were condemned by my contemporaries, but I have seen every proposition accepted as sound doctrine. As predicted the Cæsarean operation is employed with as much freedom and with greater certainty of success than was ovariotomy then. G. M. Boyd, a Fellow, reported in 1914 that he had performed forty-eight Cæsarean sections without a maternal death, and J. M. Martin, of Glasgow, in 1921 presented fifty-one. Thoms, of New Haven, Conn., reported a colored woman who had four Cæsarean deliveries between May, 1918, and November, 1921, in the last of which feeling that she had done her duty, the operator sterilized her.

The removal of the uterus for myomata and cancer marks another step in progress. These were operations infrequently performed fifty years ago and never for cancer. The cervix as a stump or pedicle was brought outside the abdominal wound, secured by a clamp, or transfixed by pins, and hemorrhage prevented by a rubber ligature below the latter. Baer, a Fellow of the college, ligated the uterine arteries, covered the stump with peritoneum, dropped it back, thus permitting the abdominal wound to be closed.

Panhysterectomy is the only operation worthy of consideration in cancer of the uterus. It became not infrequently the operation of election in large myomata when the cervix was spread out by the tumor, was diseased, or the seat of previous injury, which made its retention unfavorable for the future comfort and safety of the patient.

The discovery of the x rays by Röntgen in 1895 was probably the most striking and farreaching revelation of the age. What must have been Röntgen's sensation, when he accidentally saw the skeleton of his hand? Did he then appreciate the possibilities of this discovery? That it dawned upon him as a valuable revelation, is evident from the promptness, with which he made it known to the medical profession. Its value was at once recognized and its employment has developed a branch of medicine, useful not only in diagnosis, but in treatment as well.

A year later Becquerel described the remarkable radiant energy displayed by a sample of uranium, similar in its action to the x rays. Mme. Curie found that the radiation from the *salts* of uranium exceeded many times that obtained from the original metal. Their experiments led to the discovery of radium. The separation of radium from pitchblende has been the greatest and most notable contribution made to science by any woman.

(To be concluded)

Contributors to the Science of Medicine

Dr. William Beaumont

As is in keeping with a new country, some of the brightest lights of American medicine and surgery have been backwoodsmen. Marion Sims, who did much to develop the science of surgery on this continent, was a backwoods practitioner who came to be regarded as the leading clinical surgeon of his day. Ephraim McDowell, who also hailed from the backwoods and who did his wonderful first operation of ovariotomy, "far from the madding crowd," was a good second to Sims, and together they may be said to have founded the modern science of gynecology.

William Beaumont was another backwoodsman who was largely instrumental in revolutionizing knowledge of the physiology of digestion. He laid the foundation of the building upon which the brilliant Russian Pavlov placed the coping stone. Beaumont's experiments settled once and for all time the chemical nature of the digestive process, a subject which had puzzled physiologists from the days that Réaumur and Spallanzani first made researches in that direction. Before the results of Beaumont's investigations were made known knowledge of the physiology of digestion was of the most elementary character. Beaumont was the pioneer physiologist of this country and the first to make a contribution of enduring value.

William Beaumont, the third child of Samuel Beaumont, was born in Lebanon, Conn., November 21, 1785. His father was a frugal, thrifty New England farmer who at that time plowed his land with wooden plows drawn by oxen, sowed his grain broadcast by hand, cut it with a scythe, and threshed out the grain with the old fashioned flail. He lived sparely, went to bed and got up early, his clothes were homespun and almost proof against wear and tear and time. These New Englanders had strong religious and political views, and practised what they preached. In this straitlaced puritanical atmosphere young Beaumont was brought up and educated in the school in Lebanon under a teacher by name Tisdale, who for many years conducted the

school in such a way as to make Lebanon famous in New England.

When Beaumont was twenty-one years of age he left his father's roof and came to the village of Champlain in New York State, distant but a few miles from the Canadian frontier. He was well educated and was entrusted with the village school which he conducted for three years. In 1810 he crossed Lake Champlain to St. Albans, Vt., where he became apprentice to Dr. Benjamin Chandler and was thoroughly drilled in the duties and routine of a country practice of those days. He spent two years there never wasting time, reading the best books on medicine and surgery on which he could lay his hands, dissecting when the opportunity offered, seizing every occasion to do a postmortem, making careful notes, preserving his case records, and learning from the experience of his master. When he had completed his apprenticeship the "Third Medical Society of the State of Vermont, as by law established," granted him a license to practise.

In the war of 1812 he joined the army of the North as surgeon's mate. In 1813 he suspended duty for a time and began the practice of medicine it Plattsburgh, but soon returned to the army. In 1815, after peace had been concluded, he resigned from the army and entered into practice at Plattsburgh in partnership with another army surgeon, Dr. G. Senter. They also opened a store containing a "general assortment of drugs, medicines, groceries, dye woods, etc., which they calculate to sell on liberal terms for cash or approved credit." A few months later they dissolved partnership on account of Dr. Senter having to go South, and the firm became Beaumont and Wheelock. In 1820 he again joined the army and was commissioned by President Monroe on March 18, 1820, post surgeon of the army. He was immediately ordered to Fort Mackinac, on the northwestern frontier.

In 1822 he first came across that "old fistulous Alexis," then young, by whose means he was to make his famed investigations. In the summer the Indians and voyageurs were returning to Fort Mackinac, a station of the American Fur Company, with the results of the winter's catch. A gun was accidentally discharged in the retail store of the company and a young voyageur dropped to the floor, with a cavity in the left upper abdomen large enough to admit a man's fist. He was a young French Canadian about nineteen years old, whose name was Alexis St. Martin. The wound healed but the orifice could not be closed, and after seven months from its occurrence, the county refusing any further assistance to the patient, Beaumont took him into his family from motives of charity and a disposition to save his life, or, at least, to make him comfortable. St. Martin continued to improve in health until in 1825 the idea of carrying on a series of experiments on the stomach of St. Martin seems to have occurred to Beaumont. He began to realize the importance of the case and the opportunity vouchsafed him for learning essential scientific facts with regard to the physiology of digestion.

At or about this time he wrote the following description of the case which is recorded in the excellent life of Beaumont by Dr. Jesse S. Myer. "He will drink a quart of water or eat a dish of soup, and then by removing the dressings and compress, can immediately throw it out through the wound. On removing the dressings I frequently find the stomach inverted to the size and about the shape of a half blown rose. Yet he complains of no pain, and it will return itself, or is easily reduced by gentle pressure. When he lies on the opposite side I can look directly into the cavity of the stomach and almost see the process of digestion. I can pour in water with a funnel, or put in food with a spoon, and draw them out again with a syphon. I have frequently suspended flesh, raw and wasted, and other substances into the perforation to ascertain the length of time required to digest each; and at one time used a tent of raw beef, instead of lint, to stop the orifice, and found that in less than five hours it was completely digested off, as smooth and even as if it had been cut with a knife."

In the fall of 1824 Beaumont sent a complete report of the case to Surgeon General Lovell, who had it published in the *Medical Recorder* early in 1825. It was first published as reported by Lovell, but a correction was inserted in the same journal at the end of the year. In the meantime Beaumont found that his complete isolation in such an out of the way place as Fort Mackinac militated seriously against successful experiments. Not only were there no facilities for research but there was not a physician within a radius of many hundred miles from whom he could receive suggestions or with whom he could interchange ideas. Accordingly, he applied for an Eastern post and was transferred to Fort Niagara, where he continued to carry on his experiments, when they were interrupted by a most unexpected occurrence.

While on a visit to his family at Plattsburgh where he intended to exhibit St. Martin to some of the medical scientists of the day, the latter disappeared suddenly. It is supposed that the nearness of the Canadian border and the scenes of his boyhood proved too strong a temptation to St. Martin who took "French leave." However, Beaumont sent a series of experiments that he had made to the publisher of the *Medical Recorder*. This series of experiments numbered four, in which he noted the length of time required for the digestion of various articles of food suspended in the stomach by a silk string, which he could introduce and withdraw at pleasure, thus registering the changes in these substances from time to time. He determined "the natural warmth of the stomach" by introducing the glass portion of a thermometer marking the height of mercury on the glass and then placing it on the graduated scale. He compared the length of time of digestion of certain articles in the stomach and in vials containing gastric juice at the body temperature, agitated from time to time to imitate the gastric peristalsis. He found that the digestion took place more rapidly in the stomach than in the vial after the first half hour, that some meats digested more slowly than others, because the texture were closer than others. As Dr. Myer points out, even these incomplete experiments assured him that the old theories of maceration and putrefaction were insufficient to explain the processes that he had observed, and that the gastric secretion possessed innate solvent powers.

He was again moved, this time to Green Bay, Mich., an outpost of the fur trade where the prevailing conditions were similar to those at Mackinac. It is interesting to note that Beaumont was a staunch believer in vaccination and vaccinated voyageurs and Indians *con amore*.

In the early part of 1825 St. Martin was located. He had married, was poor and miserable, living about fifty-seven miles from Montreal. Four years from the time he left Beaumont, St. Martin returned to him with a wife and two children. During the time that he had been absent he had supported his family by the almost incredibly hard work of a voyageur, and his stomach and side were in much the same condition as when he left. He now entered Beaumont's service, who continued experiments interruptedly until March, 1831. During this time St. Martin did a great deal of hard work, became the father of more children, and enjoyed as good health and as much vigor as men in general. Moreover, he subsisted on crude food in abundant quantities, except when on prescribed diet for particular experimental purposes and under special observation. In these three years Beaumont made a series of valuable experiments, a detailed account of which there is no space to give. It may be said, however, that throughout the entire series of experiments he was suspending various articles of diet in the stomach, noting carefully the time required for the digestion of each and concluded this series of experiments with a series of ten, intended to demonstrate if possible "what effects were produced by the bile and pancreatic juice when added to chyme." It is needless to state that he arrived at no satisfactory conclusion concerning the bile and pancreatic juice. He concluded that the experiments showed plainly the solvent properties of the gastric juice and that its operation is that of a chemical agent.

Again the experiments were interrupted, as, with the consent of Beaumont, St. Martin returned to Canada. Soon after this Beaumont was at Fort Crawford, Michigan, to which post he had been ordered, where he underwent two experiences, a campaign against the Indians, and one against cholera. He also had experience of malaria and jotted down some notes on *The History of the Intermittent Fever* as it prevailed at Prairie du Chien in the summer and fall of 1830."

In 1832 the Indian war ended and the cholera epidemic was under control. Beaumont made his way to Plattsburgh and had not been there long when St. Martin appeared on the scene according to promise when the most remarkable contract ever known was drawn up between these men. This agreement provided that St. Martin should sell himself to Beaumont for a year to act as servant and for the purpose of experiments, the payment therefor to be board, lodging and all expenses and in addition $150. Beaumont had intended to spend a part of his furlough abroad but the authorities so curtailed it that he decided to spend it in Washington.

Between December 1, 1832, and March 1, 1833, 116 experiments were recorded. It seems that Alexis, who was immoderately fond of alcohol, somewhat spoiled the results of some of the experiments by his indulgence, as there is found in connection with one of his experiments that "the diseased appearance of the stomach at this examination was probably the effect of intoxication the day before." In 1833 he succeeded in enlisting the assistance of two of America's leading scientists, Robley Dunglinson, professor of physiology in the University of Virginia, and Benjamin Silliman, professor of chemistry in Yale University, and largely through them his investigations and results became known to some of the prominent men of science in Europe. In September, 1833, Beaumont published a book which was very favorably reviewed which contains an account of his experiments and deductions therefrom.

After this time he had a checkered career. He conceived the idea of obtaining aid from the Government to reimburse him for expenses incurred already and to enable him to continue his experiments. In spite of the support of the surgeon general and that of his scientific friends Congress refused to consider his appeal. This refusal was no doubt largely owing to ignorance, the members of Congress not being able to appreciate the importance and significance of a true knowledge of the physiology of digestion. Disappointed but not discouraged by this setback and heartened by the fact that his experiments had made of him an international character he determined to proceed with his attempts to solve further the problem of digestion. But again St. Martin proved a stumbling block as he did not come to meet Beaumont at Plattsburgh according to promise and no communication could be made with him.

At this time Beaumont had been transferred to Jefferson Barracks, St. Louis, a post which he found little to his liking, and at his solicitation was transferred to the arsenal where he was able to carry on private practice. Dr. Thomas Lawson had been appointed surgeon general and was not willing to allow Beaumont the facilities for experimental work or for work outside his official duties that his predecessor had allowed and the result was that Beaumont resigned from the army and thus ended his brilliant military career of more than twenty-five years.

While in private practice in St. Louis Beaumont in 1846, and at intervals up to the time almost of his death, negotiated to obtain St. Martin but never succeeded. In March, 1853, while returning home from a visit to a patient late in the evening, he slipped on ice covered stone steps, striking his head violently when he fell, and although his injuries were considered slight he never recovered completely. A few weeks later, on April 25th, he died, and thus closed an exceptional career.

Beaumont was essentially of the scientific mould. He had the inquisitiveness of the discoverer. He was not content to take for granted what other men had said but was ever on the lookout to find out the why and wherefore. In the words of Osler, the highest praise that we can give is to say that his life fulfilled the ideal with which he set out, and which he so well expressed in the sentence: "Truth, like beauty, is when unadorned adorned the most. And in prosecuting these experiments and inquiries I believe I have been guided by its light." St. Martin lived for twenty-eight years after Beaumont's death, but only a few unimportant experiments were made on him. He died at the age of eighty-three.

Editorial Articles

A FORGOTTEN WORTHY

We have called attention in these pages to the many great and influential preachers of hygiene and sanitation who were not physicians; such as Lord Bacon, Montaigne, Locke, Wesley, DeQuincey, Spencer, Beecher, and others of importance. None of these apostles of health stood out more boldly than the Reverend Charles Kingsley, though, after fifty years, he is remembered only for his *Westward Ho, Hypatia* and *The Water Babies.* Few know of him in the rôle of preacher of sanitation, of ventilation, of pure water supply, of safe sewage disposal and as a powerful pioneer advocate of health in all schools. Few indeed would guess that half a century ago he published a book on *Health in Education,* in which he prophesied that the teaching of the laws and practice of health "will, in some more civilized age and country, be held a necessary element in the school course of every child, just as necessary as reading, writing and arithmetic; for it is, after all, the most necessary branch of that 'technical education' of which we hear so much, namely, the technic, or art, of keeping alive and well." He went on to say: "The science of health, now so utterly neglected in our curriculum of socalled education, ought to be taught—the rudiments of it at least—in every school, college and university."

"I would make men and women discontented, with the divine and wholesome discontent, at their own physical frame, and at that of their children. I would accustom their eyes to those precious heirlooms of the human race, the statues of the old Greeks; to their tender grandeur, their chaste healthfulness, their unconscious, because perfect might: and say—There; these are tokens to you, and to all generations yet unborn, of what man could be once; of what he may be again if he will obey those laws of nature which are the voice of God."

In an address on Thrift, delivered to a society of women, he says: "Let me ask you, ladies, with all courtesy, but with all earnestness, Are you aware that more human beings are killed in England every year than at Waterloo or at Sadowa? Are you aware that the great majority of these victims are children? Are you aware that the diseases which carry them off are for the most part such as ought to be specially under the control of the women who love them, pet them, educate them, and would in many cases, if need be, lay down their lives for them? . . . It is a duty, one of the noblest of duties, to see that every child that is born into this great nation be developed to the highest pitch to which we can develop him, in physical strength and beauty as well as in intellect and virtue.

"We talk of the loss of human life in war. We are the fools of smoke and noise; because there are cannonballs and gunpowder, and red coats, and because it costs a great deal of money, and makes a great deal of noise in the papers, we think—'What is so terrible as war?' I will tell you what is ten times, and ten thousand times, more terrible than war, and that is—outraged Nature. . . . Nature, insidious, inexpensive, silent, sends no roar of cannon, no glitter of arms to do her work; she gives no warning note of preparation; she has no protocol, nor any diplomatic advances, whereby she warns her enemy that war is coming. . . . By the very same laws by which every blade of grass grows, and every insect springs to life in the sunbeam, she kills, and kills and kills, and is never tired of killing till she has taught man the terrible lesson he is so slow to learn, that Nature is only conquered by obeying her."

THE PROGRESS OF MEDICAL SCIENCE

During the past year medical science has progressed satisfactorily in several directions. It seems that in the field of biochemistry research will be most productive of results. Another field rich in potentialities and possibilities is that of comparative pathology, a branch of the study of disease which has been greatly neglected. In Great Britain much interest is being taken in this subject. Chairs have been established, or at any rate facilities and opportunities for gaining knowledge in this branch of science have been provided at some of the medical schools. The Zoological Society of London, under the terms of the charter, engaged to advance zoology and animal physiology. In the discharge of these obligations the society has taken recently two steps, the institution of a Fellowship of Comparative Pathology, jointly with the London School of Hygiene and Tropical Medicine, and of an Aquarium Research Fellowship. The only limitation laid down is that none of the animals in the London Zoological Gardens shall be used for the purpose of vivisection.

It may be said that it has long been recognized that the material supplied by zoological gardens offers remarkably wide scope for scientific investigation. Up to the present time, however, the work done has been chiefly in anatomical research, particularly in its possible bearing on systematic zoology. So long ago as the year 1865, when Huxley first became a

member of the council of the London Zoological Society, a prosector, whose duty it was to make postmortem examinations on the animals that died, was first appointed. The first prosector did some pathological work, but his successors did little or nothing in this line.

What can be accomplished and how rich are the opportunities have been amply demonstrated in the researches undertaken privately by Sir John Bland Sutton, president of the Royal College of Surgeons. While there has been a pathologist on the staff of the London Zoological Society since 1903, none of the holders has been a full time worker, and the investigations conducted by them have produced no important results. In this connection it may be pointed out that in Philadelphia, where the most consecutive and elaborate work on comparative pathology has been carried on, Dr. Herbert Fox, who made the postmortems in the Zoological Gardens, held a post in the university. Dr. H. H. Scott, the recently appointed Fellow of Comparative Pathology of the London Zoological Society and who, by the way, has distinguished himself especially by his investigation of the pathology and the discovery of a satisfactory treatment of sprue, will devote himself solely to research, and thus has been given a unique opportunity by the Zoological Society and the London School of Hygiene and Tropical Medicine.

By investigations made on the lower animals, knowledge of certain branches of medical science, to wit, embryology, anatomy, and parasitology, has been furthered greatly. In a like manner much may be gained in the study and understanding of human disease and veterinary medicine from comparative pathology. All the mammals have a more or less close family relationship and there is a less definite although obvious connection between them and birds, reptiles, and fishes. There may be and most probably are diseases and conditions of ill health peculiar to particular species, as for instance, man and the anthropoid ape.

The field of comparative pathology, however, in which useful knowledge is most likely to be gleaned, is the study of different phases exhibited by the same disease in different animals. Animals of one species may show a different form of a disease common to the species at large from the form exhibited by animals of another species, and by comparing these various aspects, a great deal may be learned of the history of the origin and distinctive character of the disease. Indeed, by the study of animals in a state of captivity, approaching perhaps in some degree the manner of life of man in a state of civilization, some facts may be learned of the socalled diseases of civilization, from many of which primitive man living in a state of nature somewhat resembling that of wild animals, is said to be and to have been immune. There appear to be such infinite possibilities in the study of comparative pathology pursued under fairly favorable conditions, that some of the secrets of the origin of disease which have baffled for so long the persistent efforts of investigators to lay bare, may at last be disclosed.

SEX AND CIVILIZATION

Psychology has come to the front—its zealous adherents might say, has come into its own, in recent years. The followers of Freud abound and many of the obscure complaints from which a somewhat neurotic generation suffer are treated by psychoanalysis. Paul Bousfield is prominent and in his latest work, *Sex and Civilization,* he brings forward some speculations and views of an uncommon nature. In it he discusses the position of women in England, where they are unfavorably situated from an economic viewpoint, and while admitting that, to some extent, this is the result of prejudice and legal disability, asks the question whether if prejudice and legal disability were completely swept away, would woman in general be able to take a place in the economic world in any way equal to that of man.

Of course, most people would answer that for two reasons she would be unable to do this: firstly, on account of her physical disabilities, and secondly, because of her temperamental disabilities. The author doubts the validity of both these reasons and in the book he marshals his arguments in support of these dissentient opinions. He endeavors to show that neither her physical nor temperamental disabilities are really so great as is commonly supposed and that given a different upbringing the sexes would be much more nearly on a plane of equality. He argues that the existing system of rearing and educating the sexes tends to emphasize their innate qualities and characteristics, mental and physical, and to confer on the male sex the dominance. He holds that male dominance is not in the best interests of society and the race.

So far as psychic disability of the female is concerned Bousfield says that research into the matter tends to show that this is chiefly due to waste of sexual energy. The main psychic difference between man and woman in this respect being connected with the fact that the man largely concentrates his erotic energy on what may be termed the normal acts of sex, which occupy but a little time and consume but a comparatively small amount of his psychic energy. On the other hand, the woman's sexual activity remains in an infantile form that is

spread throughout her whole life in such a way as to take up an immense amount of time with a corresponding expenditure of energy. This concentration on sexual matters is due chiefly to the repression which conventions of civilization have forced upon her from early childhood, and to the lack of provision for nonerotic outlets for her impulses and psychic energy for which the male is given ample opportunities for gratifying and dissipating. Thus it is contended in the book that the differences physical and temperamental between the sexes are purely artificial, man made in fact, which can be usefully overcome by the proper application of psychological research to the education of future generations.

Stop or hinder the continual leakage of energy which is the bane of civilized woman and the woman will be of equal capacity with man. That is to say, provide equal conditions for the two sexes, both during youth and adult life. Girls are not to be distinguished from boys by dress or to be taught that they belong to the weaker sex, nor boys to be inculcated with the notion that they are to show special marks of courtesy to members of the opposite sex. In short, the sexes are to be brought up, educated and live in exactly the same manner. Women are to be as free to make love and propose marriage as men, occupations are to be open to both sexes on strictly equal terms, and lastly the canons of morality from the sexual point of view are to apply with equal force to both sexes and no stigma is to be attached to the illegitimate child.

Bousfield presents his case vigorously and plausibly and with several points that he brings forward there is general agreement. For example, the difference in physical strength and endurance between the sexes is no doubt exaggerated. In endurance woman is superior to man in many respects. It is obvious, indeed, that it is folly to bring up girls as if they were tender plants and it is wise to encourage their participation in healthy games and in vigorous out of door exercise. But it is quite as obvious that the average woman is considerably less muscular than the average man and it seems doubtful whether living the same life as a man during generations would bring woman up to his physical standard. Physiologically and anatomically there is a difference between the sexes which appears to give to the man a physical superiority which he will retain to the end. Intellectually again, man seems to be on a higher plane than the woman, although woman's handicap in upbringing may account largely for her apparent inferiority.

Few women are original and they are almost wholly lacking in inventive genius. In fact women have rarely displayed genius in any phase of human endeavor. Talent of a very high order is fairly common in women, but genius of the first order is almost unknown. However, Bousfield does not intend his book as a final statement on a most fascinating subject, but rather as a suggestion of lines for further research to those who may follow. The book should act as an urge to others to pursue similar investigations.

BRAIN WEIGHT IN RELATION TO GENIUS

Discussion has been waged with regard to the relationship of the size of the brain to genius. Examples of brains of celebrated men have not decided the question as some of these have been heavy and others light brains. At the postmorten made recently on that great Frenchman, Anatole France, Felix Regault made an investigation on the brain and has contributed some notes on its weight. Anatole France was a tall and well built man, and the weight of his brain, which is given by Regault as 1-017 grams, did not express its quality. The average weight of the male brain in English tables is a little over 1-350 grams and in French textbooks is given at 1-390, so that the brain weight of Anatole France was considerably below the average.

It is obvious then that in this case the common belief that the weight of the brain bears a definite proportion to the scope of genius was not exemplified. Autopsies of distinguished men reveal so many variations in the weight of the brain that no deductions even of a general character can be made.

Regault does note that the convolutions of the brain of Anatole France were specially marked and the furrows deep. Only the most important of the furrows between the convolutions appear early in embryonic life, namely, those representing folds in the entire thickness of the brain wall. As the other convolutions appear, they are separated by furrows on sulci of a fairly constant character, but considerable differences within limits are found not only in individuals, but even in the two hemispheres of the same brain. As it is clear that the convoluted condition of the surface admits of a great increase of the grey matter without the sacrifice of large additional space, so it is reasonable to suppose that the number and extent of the convolutions, as well as the depth of the intervening sulci, should bear a direct relation to the intellectual powers of the individual.

There is evidence from the consideration of many postmortem examinations that such is the case, and the weight of the brain of another great Frenchman, Gambetta, is being quoted in support of the generalization, as Gambetta, like Anatole France, was found to have a comparatively light brain, with many well-defined convolutions separated by deep sulci.

CHRONIC DISEASES AS A HOSPITAL PROBLEM

The Public Health Committee of the New York Academy of Medicine in its report on The Hospital Situation in Greater New York, calls attention among other things, to the lack of institutional facilities for chronic patients and points out that even in New York city the institutional accommodations for these patients are inadequate. The obligation which the community owes to the chronic invalid has never been brought into proper focus and has never been properly defined. This state of affairs is not peculiar to New York city, but is countrywide. The interest of those most intimately concerned with community health and hospital problems is just beginning to be attracted to the subject. Several communities have attempted to formulate policies in regard to the care of the chronic sick, but there have been few facts available to serve as a guide.

One of the most important reasons for public indifference and for the chaotic state of mind in regard to this subject is the fact that no effort has been made to define what is meant by the chronic invalid and to visualize him and his needs as an individual. A patient who is chronically incapacitated by disease is ordinarily classed as an incurable and consequently it is tacitly assumed that expert medical care will be of no benefit to him and that so long as he receives food and lodging and the most elemental care, either at home or in a custodial institution, the community has discharged its obligation to him. This view is commonly current, not alone among the people at large, but also among physicians and others who are active in general hospitals and in other organizations that minister to the medical and economic needs of the community.

Consequently, the patient suffering from a chronic disease is cared for, if at all, in a haphazard manner and, when institutional care becomes necessary, is placed wherever he can gain admission, quite irrespective of whether or not the institution can serve his needs. The majority of patients with chronic diseases have found refuge in private homes for incurables, in municipal and county almshouses and in homes for the aged and infirm. A scant minority are accommodated in well organized hospitals for chronic diseases. Many who need institutional care must remain at home.

Not only is there an insufficiency in the number of beds for chronic cases, but also an inadequacy in the type of institutional care that is provided. There must be recognition of the fact that about seventy-five per cent. of these patients require intensive medical and nursing care, which can be given only in an institution having the equipment and organization of a general hospital. Custodial care, such as is provided at present in homes for incurables and almshouses, is inadequate in only one quarter of the cases.

Selfinterest, as well as humanity, demands that steps be taken for the correction of these conditions. Many of these patients can be rehabilitated if the effort is made and the means are provided. Instead of being permanent community charges many, after prolonged treatment, can be discharged to their homes.

At present, largely from ignorance, public opinion is dormant on this problem. It would be highly desirable to have a representative committee undertake a detailed survey of this situation and give the widest publicity to the results of its investigation.

RICKETS

Many diseases are diseases of civilization, but one of the most obviously so is rickets. When man lived in the open with a natural diet rickets was unknown. Dr. Joseph Garland contributes to the *Boston Medical and Surgical Journal,* March 26, 1925, a most strikingly rational article on rickets. He points out that civilized man has shut himself up into houses where the sunlight cannot reach him, and has substituted for a natural abundance of diet a diet of concentrated, preserved and altered foodstuffs. He also draws attention to the fact that the older school of clinicians recognized rickets empirically as well as its effective treatment. Indeed the use of codliver oil as an antirachitic agent has been known and practised for more than a hundred years as it was introduced into France for this purpose by Bretonneau, who lived from 1778 to 1862, while Guy in an article on the subject, *American Journal of Diseases of Children,* August, 1923, has traced the medicinal use of various fish oils for one purpose or another from the times of Hippocrates and Pliny through its entrance into the *British Pharmacopeia* in 1777 until the present time.

Discussion has waged around the etiology of rickets for long and during the past few years it has waged fast and furious. As said before the causes of rickets in a broad and general sense have been well recognized by clinicians for generations, but with the advent of bacteriology and the awakening of the scientific sense, the modern school of medicine has distrusted clinical observation however strongly fortified by experience and have demanded scientific proof. Numerous theories have been promulgated to account for rickets. Glisson, for example, believed it to be due to overeating. Heitzmann believed that the disease was owing to an acidosis which caused decalcification of the bones and is supported by Klose, Vogt and Pritchard. Others

have held that rickets is inherited, that it is the result of disturbance of the endocrine glands, or that it is the result of infection.

Findlay holds that the real cause of rickets is not yet known, but opines that the lack of fresh air and exercise and light are the chief factors in its production. A considerable number of French clinicians have asserted that rickets is a manifestation of congenital syphilis and autointoxication. Clement writing in the *Franco-British Medical Review,* January, 1925, thinks that a syphilitic etiology is highly debatable, but that unsuitable diet seems to be a factor. Mellanby, as a result of experiments, stated that the condition is probably owing to a lack of vitamine A and the British Medical Research Council somewhat prematurely identified the lacking factor as vitamine A. American investigators, McCollum and his colleagues, then established the importance of the rôle played by calcium and phosphorous in the pathogenesis of rickets and Orr of the Rowett Institute, Aberdeen, carried these investigations further. Shipley, Park, McCollum and Symonds suggest the possibility of two main kinds of rickets, a low phosphorus rickets with approximately normal calcium, and a low calcium rickets with approximately normal phosphorus.

As Clement points out in the article referred to already there is some evidence that osteomalacia may be related intimately to rickets if not identical, evidence from India seems to point in that direction. Clement suggests it would be of interest to know if the same curative effects could be obtained in osteomalacia by the ultraviolet rays, solar or artificial, as in rickets. Garland holds that light rays are the chief factors in the prevention and treatment of rickets, but unlike some light enthusiasts does not believe that diet is an almost negligible factor. In his opinion the antirachitic or x factor as contained in foods, and especially in codliver oil, is the second great agent in the prevention and treatment of rickets.

In conclusion, although the exact cause or causes of rickets are as yet undiscovered, it is known how the condition may be prevented or prevented from developing. And as Garland says, "for all practical purposes, our knowledge concerning its causes and our knowledge concerning its control are much as they were a century ago, for they were very complete then, in their fundamentals. Sunlight and its substitutes and codliver oil and its substitutes will prevent rickets and cure the disease once it has become evident, but to use a homely adage, an ounce of prevention is worth a pound of cure." Of course in the prevention of rickets good housing plays a great part and rickets will never be abolished so long as slums exist in large cities.

The feature of Garland's commonsense paper is that clinical observation matured by experience is still one of the greatest assets of a physician.

PERIODONTOCLASIA

The dentist has his long names as well as the physician. Periodontoclasia is used now, among the more knowing and exact, for pyorrhea, and, according to a dental surgeon, this disease "has had forty or fifty other names," none of which helped much in its diagnosis or cure. This writer continues: "More ignorance in dental diagnosis has been hidden behind these names than can be encountered in all the rest of dentistry combined. It has latterly been used as a bugaboo to frighten ignorant people into purchasing nostrums that have no place in the home care of the teeth. The term signifies an inflammatory pathological condition of the tissues infesting the roots of the teeth as well as the periosteum itself."

It is only about a quarter of a century since clinicians began to look their patients in the mouth so far as the condition of the teeth is concerned, and when the average hospital and dispensary case was so examined the findings were not pleasant to look upon. Clinical material in medical schools is chiefly constituted of the flotsam and jetsam of society who are ill because uncared for, and without proper care become ill. Periodontoclasia is, with them, the rule, which only goes to prove what the above dentist further says: that this condition "is never found in the mouths of people who are well. It is a symptom of anything which alters the physiologic balance of the circulation, and these may vary from some simple type of metastasis to a simple toxemia.

"At the beginning the natural power of resistance will prevent infection, but as the etiological disease increases in severity this is more and more diminished until finally infection gains a foothold, to be followed by any of the numerous types in which periodontoclasia is manifested. From this it is self evident that pyorrhea is never a disease *de novo,* but always a symptom of some disease."

And arthritis and other affections blamed upon this disease of the roots of the teeth? They are certainly not to be blamed upon pyorrhea. The same cause is at work and the removal of the diseased teeth does not remove the cause, though it may in some instances, perhaps, remove storage places of infectious material and postpone other decay. The mouths may be filthy but the blood and lymph back of the mouth is every whit as noxious, even if the badness be as invisible as carbon monoxide is invisible. The cleaning of a bad mouth is only the beginning of conversion to health.

News Items.

Memorial Library.—The library of the late Dr. Julius Parker Sedgwick, mainly on pediatrics, has been presented to the University of Minnesota, as a memorial.

Tuberculosis Hospitals Desire Pianos.—The New York Tuberculosis Association is anxious for gifts of pianos, especially for the twelve institutions directly under its supervision.

Use of Insulin.—A new decree in Germany classes insulin, including all pancreas extracts for injection, among the remedies for which a physician's prescription is required.

Chinese Medical Association.—The tenth anniversary of the National Medical Association of China is being celebrated. A campaign has been started to raise $100,000 for headquarters in Shanghai.

Memorial to Doctor Fletcher.—A recently completed high school in Asheville, North Carolina, has been named in memory of the late Dr. Marshall Hall Fletcher, a former president of the State Medical Society.

Study of Crime in Children.—New York University and the Children's Village are planning courses of study of crime in children, for executives and workers of institutions, to begin in September, under the direction of Leon C. Faulkner.

Gift of Radium.—The will of the late Dr. Edward L'Hommedieu McGinnis, New York, leaves his electrotherapeutic machines and a tube of radium to the Crocker Institute for Cancer Research, of Columbia, to be used under the direction of Dr. Francis Carter Wood.

Course at Strasbourg University.—A course in dermatology and venereal diseases will be held from September 12th to November 7th, at Strasbourg University, under the direction of Dr. L. M. Pautrier, to whom application should be made at 2 Quai St. Nicolas, Strasbourg, France.

Memorial Hospital.—The Bahnson Memorial Infirmary, built in memory of the late Dr. Henry F. Bahnson, of Winston-Salem, North Carolina, was presented to the Salem Women's College, at commencement time. Doctor Bahnson was president of the state medical society, and of the state board of health.

Institute for Biology.—Johns Hopkins University is to have a new institution for research in general problems of biology, especially population problems and the duration of life and its control. The institute will be financed by the Rockefeller Foundation, and will be under the direction of Raymond Pearl, Ph.D.

Faculty Changes at Jefferson Medical College.—Dr. Francis X. Dercum and Dr. Edward F. Hansell, of Jefferson Medical College, have been appointed emeriti professors of their departments, and active work taken over by Dr. Edward A. Strecker, as professor of nervous and mental diseases, and Dr. William M. Sweet, as professor of ophthalmology. Dr. P. Brooke Bland, of Philadelphia, has been appointed professor of obstetrics, and Dr. Norris Wistar Vaux, clinical professor of obstetrics.

Philadelphia County Medical Society.—The board of directors of this society announce the purchase of a permanent home—the old George C. Thomas estate at the corner of Twenty-first and Spruce Streets. The former art gallery of the building is to be altered into a meeting place accommodating about five hundred and fifty. The cost price was $125,000.

Guggenheim Fellowships.—Among those receiving fellowships for research study abroad, from the John Simon Guggenheim Memorial Foundation, are Dr. Percival Bailey of Peter Bent Brigham Hospital, Boston, for research in diseases of the nervous system, in Paris; and Dr. Edwin W. Schultz, of Stamford University, for study of bacteriophagy, in Egypt.

American Electrotherapeutic Association.—This association will hold its thirty fifth annual session September 15th to 18th, at the Hotel Drake, Chicago, Ill. Papers will be read by the leading men in the field of physical therapeutics and by invited guests of national reputation. A demonstration of actual technic of application of the various physical modalities will be given. There will be a complete exhibit of the latest electrotherapeutic apparatus and accessories. All legally licensed physicians are welcome and detailed program can be obtained by addressing Dr. Richard Kovacs, secretary, 223 East sixty-eighth Street, New York.

Doctor Rushmore Honored.—Dr. John D. Rushmore, of Brooklyn, was guest of honor at a luncheon, and was presented with a gold headed cane, to mark the completion of fifty years of practice. Doctor Rushmore is the emeritus professor of surgery at the Long Island Medical College Hospital. Dr. John O. Polak presided, and Dr. Frederick Tilney made the presentation.

New Convalescent Home.—A gift of one million dollars and two hundred acres of land at Greenwich, Connecticut, has been received by St. Luke's Hospital, from Mrs. Harriet M. Arnold, of New York, for a convalescent home. Half of the money is to provide buildings, and the other half is to be used as a permanent endowment fund. The gift was made without restrictions, but the request was made that a chapel be provided in the buildings.

Resolutions on Death of Doctor Dann.—The following resolution was adopted by the New York Eye and Ear Infirmary:

Resolved, That the Board of Surgeons of the New York Eye and Ear Infirmary records with profound sorrow the death of its late colleague, Dr. Nicholas R. Dann, who has faithfully served the Infirmary for the past twenty-five years. The Board of Surgeons extends to the bereaved widow its sincerest sympathy.

EDWARD B. DENCH, M.D., *Chairman*,
ROBERT LEWIS, *Secretary*.

Graduate Courses in Gastroenterology.—Two courses in gastroenterology—preliminary and practical—are to be given at Columbia University, by Dr. John Leonard Kantor, of New York. The preliminary course will be given from July 1st to 21st, repeated August 3d to 21st; and the practical course from July 22nd to August first, repeated August 22d to September 2d. Each course includes rontgen ray demonstrations; and the practical course will include clinical conferences on actual cases, with opportunity to assist in or perform the various manipulations necessary.

Fellowships in Neuropsychiatry.—The University of Pennsylvania, Graduate School of Medicine, announces five fellowships in neuropsychiatry, established by the Commonwealth Fund of New York. The fellowships are established for a period of three years from October 12, 1925, and will be for approximately $2,200 a year. The plans are for one year fundamental, one year practical, and one year investigative work. Application should be addressed to the Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia.

Medical Education Survey.—A Commission on National Medical Education has been appointed to make, under the general direction of the American Association of Medical Colleges, a five year study of medical education in this country. It is hoped that when the study is completed, legislatures passing laws regarding medical education and practice will have the advantage of well devised standards for guidance. No specific curriculum will be prescribed, however. Dr. Willard C. Rappleye, at present director of the New Haven General Hospital, will be executive head of the commission, and the other members are President A. Lawrence Lowell of Harvard, President Ray L. Wilbur of Stanford University, President Walter A. Jessup of the University of Iowa, Chancellor Samuel P. Capen of the University of Buffalo, Sir Robert Falconer, president of the University of Toronto; Dr. Walter L. Bierring of the National Board of Medical Examiners, and former Dean George Blumer, of the Yale Medical School.

Personal.—Dr. W. B. Brinsmade of New York has been appointed a Chevalier of the Legion of Honor by the French government. He was officially cited by General Pershing for meritorious and conspicuous service.

Dr. Fred H. Albee of New York has been appointed chairman of the American Committee of the International Medical Congress of Industrial Accidents and Diseases, which holds its next meeting in Amsterdam, Holland.

Dr. Louis Faugères Bishop, Jr., and Kathleen Sinclair, both of New York, were married June 20th at St. Thomas's Church.

Dr. Howard Buchanan, medical missionary for the United Presbyterian Board of Missions in the Sudan, who was blinded by a sandstorm on a trip to a nearby mission station, has returned to his home in Philadelphia, for treatment.

Dr. Hyman I. Goldstein, of Camden, New Jersey, was nominated as democratic candidate for coroner for Camden county; he has been elected vice-president of the Camden Federation of Jewish Charities, and president of B'nai B'rith at the June meeting.

Book Reviews

REJUVENATION

Theory and Practice of the Steinach Operation. With a Report on One Hundred Cases. By Dr. Peter Schmidt (Berlin). And an Introduction to the English Edition by J. Johnston Abraham. London: William Heinemann (Medical Books), Ltd., 1924. Pp. 150.

Rejuvenation. The Work of Steinach, Voronoff, and Others. By Norman Haire, Ch. M., M.B. New York: The Macmillan Company, 1925. Pp. 223.

The literature on the subject of rejuvenation and the Steinach operation has recently grown considerably and the latest contributions in English are the two books listed above.

Peter Schmidt's book is a translation and adaptation of his original German publication, somewhat enlarged, with the bibliography completed and containing reports on nearly one hundred cases in which the author operated. Schmidt, who is practising at present in China, is considered the foremost German exponent of the rejuvenation method of Steinach. In the first chapter, he gives a general survey of the most important publications dealing with the endocrinology of the sex glands and with regeneration by means of implantation and vasoligation. He reviews Steinach's work in which evidence of the dependence of the secondary sex characters on the internal secretion of the generative gland was adduced. The Leydig cell theory is discussed at length and the point of view of Steinach and his school, as compared with that of his opponents, is clearly defined. In Schmidt's opinion, the question is no longer, "Has vasoligation an effect?" but "Why has vasoligation an effect?"

A number of publications dealing with practical experience of the Steinach operation are discussed in this chapter and a number of cases operated in and reported by Lichtenstern, Benjamin, Chetwood, Klika and others are cited; likewise various animal experiments and the results of animal rejuvenation. The question of whether the generative portion of the testicle is the hormone producing tissue or whether this function is to be ascribed to the interstitial tissue is decided in favor of the latter theory. The pros and cons are reviewed in the same thorough and enlightening manner as in the original German.

In the second chapter Schmidt deals with the clinical picture produced by vasoligation in men and describes eighty-four cases of his own in detail. In chapter three he summarizes the clinical results and comes to the conclusion that decided benefits are derived in the somatic as well as the psychic life of the patients.

As the main indication for the operation, Schmidt mentions the extensive field of old age and its accompanying phenomena. Another large field for which the operation is indicated, he refers to as "single or polyglandular insufficiency" and the manifestations of such dysfunctioning. Psychic disturbances connected with wrong functioning of the sex glands offer frequent chances for success since the improved output of sexual hormones have a decided influence on the central nervous system. Lipschuetz's work in this regard is thoroughly reviewed. After mentioning prostatic hypertrophy as another frequent indication, he also considers the contraindications and finds that in cases of progressive tuberculosis and advanced hypertonia the patients should not be operated on.

A brief chapter on the results of the Steinach operation in men in relation to medicine in general and to sociology concludes the book. A very valuable and complete bibliography is added.

Schmidt's book is the only one written for the medical profession exclusively. Norman Haire's *Rejuvenation* deviates somewhat in this respect, as it is easily understandable to the laity also. Besides, it describes not only Steinach's researches and the results of vasoligation (the socalled Steinach operation) but also deals with the work of transplantation as advocated mainly by Voronoff. Haire also goes into the problem of rejuvenation in women by way of the transplantation of ovaries and through stimulating x ray treatments.

A brief general survey acquaints the reader with endocrine problems in general and the function of the sex glands in particular. Brief descriptions are given of the various methods employed to improve gonadal activity, explaining the nature of the homoplastic, autoplastic and heteroplastic methods.

In the second chapter, the rejuvenation experiments on animals are described in more detail. Complete case histories of Steinach's rejuvenated rats are given, as well as Voronoff's, Thorek's and Sand's experiences on animals. Sand's illustrated case of a senile dog is especially interesting. Unfortunately, recognition of Otmar Wilhelm's work on animals is missing. The next chapter, which is by far the longest in the book, describes the operation on human beings, complete case histories being reprinted from the original publications of various surgeons:

First, five cases of Lichtenstern of Vienna, who was the first surgeon who operated on Steinach's patients. His conclusions endorsing vasoligation are added.

Second, the work of Peter Schmidt, Berlin, is reviewed and a number of his cases related in detail with Schmidt's indications and suggestions in regard to the Steinach operation. After that follow four case histories of vasoligation reported by Walker and Cook (London), who disagree with Steinach's interpretation of his histological observations, but agree as to the practical results of the operation. Three of their patients were suffering from paralysis agitans and were distinctly improved. Reports of twenty-two cases in which operation was performed by Benjamin are reprinted with his technic, indications and confirmatory conclusions. After also mentioning the positive results of Knut Sand's human operations, Haire finally reports four of his own twenty-five cases in which he performed vasoligature. He gives his technic in detail. The results of the cases, which are described in a painstaking manner, are impressive and convincing.

The second part of this chapter deals with transplantation operations of testicles not only for the purpose of rejuvenation but also for the cure of eunuchoidism, loss of testicles and for the cure of

homosexuality. A highly interesting case of Lichtenstern is given in detail where castration and then transplantation of a normal testicle definitely cured a homosexual, whose inversion apparently was based on the production of a perverted gonadal hormone. Transplantation operations of Muehsam and Walker are reported, and likewise the work of Lydston is reviewed with eight case histories. Brief mention is made of Stanley's modified transplantation methods, Haire finally comes to the most important work, the work of Voronoff who does not use human material as the aforementioned surgeons, but choooses young adult monkeys, as donors of the testicles. His indications for testicular transplantation are: loss of testicles, infantilism, congenital testicular deficiency, senility, hardening of the arteries and dementia precox. Voronoff's technic and twelve of his cases are reported. A striking photograph of one of Voronoff's patients is also reproduced. The same procedure has been carried out in a number of cases by Thorek, partly through human and partly through ape transplantations. Thorek's indications and two of his cases are described.

The last part of this chapter deals with transplantation and stimulation of ovaries for the purpose of rejuvenation in women. Sippel in Berlin and Nattrass of Melbourne have done ovarian transplantations. Holzknecht, of Vienna, and Benjamin, of New York, have used mild stimulating x ray doses and the latter's cases with endocrine interpretation are reprinted. This entire chapter, although complete enough for the layman, omits a number of positive as well as negative reports, the authors of which can, however, be found in the bibliography.

The last chapter is devoted to criticisms and Haires's own conclusions, which are greatly abbreviated as follows:

1. The operation of vasoligation has no ill effects.
2. The operation is not universally successful.
3. Even in cases of organic diseases and advanced senility the operation often ameliorates the condition.
4. In carefully chosen cases, the operation may be very useful.
5. In successful cases many symptoms may improve, for instance, high blood pressure and insomnia. It may cause renewed growth of hair, improved capacity for mental work, and possibly increased sexual ability.
6. Unilateral ligations may often be quite sufficient. In some serious conditions, the bilateral operation may sometimes be necessary.
7. Transplantation of a testicle has no ill effects.
8. Transplantation of a testicle sometimes succeeds where vasoligation fails.
9. If successful, it may bring about the changes described under 5.
10. The testicle should be obtained from a human being if possible. One from a higher ape would be the next best substitute.
11. X ray radiation of the testicle is still in an experimental stage.
12. Transplantation of an ovary has no ill effects.
13. Transplantation of ovaries should always be carried out as a prophylactic measure, where the women's own ovaries have to be removed, owing to some disease.
14. Ovarian transplantation may be useful in senility, in deficient sex feeling and in certain cases of sterility.
15. X ray radiation of the ovary is still in an experimental stage. [The reviewer begs to disagree with this statement, owing to his own experience.]
16. It is impossible to decide whether any of these operations actually prolong life. There is absolutely no reason to believe that they shorten life at all.

Haires's book contains a bibliography and a very enlightening, unprejudiced and well written foreword by the author himself.

BACTERIOLOGY

An Introduction to Practical Bacteriology, as applied to Medicine and Public Health. By T. J. Mackie, M. D. (Glas.), D. P. H. (Oxford), and J. E. McCartney, M.D., D.Sc., Edin. New York: William Wood and Company. Edinburgh: E. and S. Livingston, 1925. Pp. 297.

This is not a textbook of bacteriology, but a practical laboratory guide or desk book for student use. Space is saved by the omission of practically all cuts, either of apparatus or of bacteria, a few explanatory diagrams only having been inserted. The technical directions are very complete, and cover all the work which a student would be expected to do in a course in bacteriology. It also includes what is usually omitted in American courses, and that is a certain amount of protozoology, the methods of staining Spironema pallidum in tissues, and some special technical procedures. It should be a very valuable guide for the student for whom it is intended.

TRANSFUSION

La Transfusion du Sang. Etude biologique et clinique. Par P-Emile Weil et Paul Isch-Wall. Paris: Masson et Cie, 1925.

This is an excellent and comprehensive monograph on transfusion. The introductory historical chapter is complete and makes fascinating reading. There follow chapters on the biology of transfusion, blood grouping, technic, and indications. A good bibliography, in which due weight is given to the American literature, concludes the work. American physicians will not quite share the authors' enthusiasm that transfusion is always harmless; nor will they agree that it is of major value in combatting surgical shock and acute infections. Nevertheless the book can be highly recommended as a scholarly, well balanced production, written by men with a first hand knowledge of their subject.

SPIROCHETAL RESPIRATORY DISEASES

Spirochetoses Respiratoires Stomatogenes. By G. Delamare. Paris: Masson et Cie, 1924. Pp. 143.

Under this title the author designates the respiratory diseases caused by the spirochetal organism producing often very severe nasal, laryngeal, tracheobronchitic, pleural, pulmonary, hemorrhagic and gangrenous symptoms. In this monograph the author brings forth the ideas concerning the origin of the disease, as having its primary focus most frequently in the mouth, but occasionally also in the upper respiratory tract. He gives an interesting history of his observations during the great epidemic of 1918-19, on which he has based all his conclusions. A careful reading of the chapters on etiology, experi-

mental pathology, symptomatology, diagnosis and prognosis, treatment and prophylaxis, and the epidemiology of the disease will give one a good idea of the present knowledge of this relatively new disease, so often mistakenly diagnosed as pulmonary tuberculosis. Particularly interesting are the observations quoted concerning the localization and geographical distribution of the disease during the epidemics of 1918-19. While, according to Castellani, immediately following the world war there were only three per cent. of spirochetal diseases in the Balkan regions, in Petrograd there were at the same time eighteen per cent.

Under prophylaxis the author recommends oral hygiene, particularly during grip epidemics, isolation of patients and disinfecting the expectoration. As treatment, besides building up the patient and attending to complications, he strongly advocates neosalvarsan. An extensive bibliography on spirochetal diseases, dating from 1906 to 1921, covering seven pages, is found at the end of the book, pages 3 to 8 containing an enumeration of 137 monographs on various medical subjects written by the author, Dr. G. Delamare.

THE ANEMIAS

Contribution to the Study of Pernicious Anemia and Aplastic Anemia. By Arthur Sheard, M.D. A Thesis Presented for the Degree of Doctor of Medicine in the University of Leeds, December, 1923. New York: William Wood and Company, 1924. Pp. 94.

This brief monograph covers the important facts and the significant literature of pernicious anemia and aplastic anemia. The author gives data from a study of fifteen cases of pernicious anemia. He presents evidence to show that in the postmortem study of the bone marrow in the anemias, it is important to examine many bones, for some of the long bones may show aplasia, while other ones show marked hyperplasia in the same case. In other words, the bone marrow does not undergo uniform hyperplasia throughout. The section on aplastic anemia consists of a review of the literature. The author believes that the majority of cases of aplastic anemia bear no relation whatever to pernicious anemia. Seventeen case reports and two excellent colored plates of the gross appearance of the bone marrow in various bones are included in the book.

The booklet may be recommended as giving a brief but adequate summary of the present state of our knowledge of pernicious and aplastic anemia.

OCTOPUS

The Matriarch. A chronicle. By G. B. Stern. New York: Alfred A. Knopf, 1925. Pp. 291.

It is not the Jewish family alone that holds its members in octopuslike toils, although the Jewish family has that long cherished tradition. Any solidarity of the past brings with it the conditions and problems so masterfully set forth. It is this quality of seemingly hammering at one point in a perfectly naïve and absorbed way, while the implications roll and flare from her anvil that makes Miss Stern such an excellent craftsman. The story is enough just by itself. What one learns from the story about her friends, the actors in this century of Jewish living, is enough. And what one gathers uneasily, maybe unconsciously at the time, to stick like burrs in one's memory, is also enough for the average intellect. Some get one dose, others get two, others get the whole exotic menu, not so much according to mental attainments, but according to what the readers' sore spots are on the tyranny-of-family situation.

The institution of matriarchy is thought by many to be the most primitive expression of the family. Matriarchy in the Jewish race is only to be expected since we have an ethnological group, compact, psychologically unchanged, since its first nomadic intrusions into the settled races. As a tribe, the race has remained defiant, often foolishly so. It is essentially a race ruled by cautious elders—policy dictated by the males, life dictated by the females. And life is always a few steps ahead of policy. So the race has been able to progress.

Early in the nineteenth century the elaborate chronicle begins. The network of family is already far flung like a spider's web. Miss Stern has chosen to follow one strain, the Rakonitz thread, a small family within a vast one, promoting individually what the race promotes. The eldest daughter of the eldest daughter steps each in turn under the shadow of the matriarchal cloak. In youth there is protest, an erratic burst to freedom—then acceptance and finally glory in the power thus conferred. Each matriarch—Babette, Anastasia, Toni—defies the world to find any similarity between herself and the almost demonic forbear. And yet there is no particle of change. Only as the generations spin out, new blood is gradually absorbed, tribal history becomes less real, less thrilling, less dangerous. The past gradually corrects itself, the normal healthy urge towards the future outweighs it.

A CANADIAN LOYALIST

Looking Backward. By George Sterling Ryerson, M.D. Toronto: The Ryerson Press, 1924. Pp. 264.

The author, who is well known in the United States as well as in his own country, Canada, through his career as professor of eye, ear and throat diseases in Trinity Medical College and the University of Toronto, traces his ancestry back to one of two brothers named Reyerzoon who in 1647 emigrated from Holland to America and settled in New York. At the time of the American Revolution, Dr. Ryerson's grandfather became a loyalist soldier at a very early age, and served with the British troops against the colonists.

Dr. Ryerson writes next of his own early life, his education in Edinburgh, Paris and Vienna, and his professional career in Canada. At the time of the Fenian raid in 1870, he was an ensign in a foot regiment, and was a regimental medical officer in the campaign of 1885 against the Indians. At this time he organized a bearer section and gives a most interesting account of his journey with it to the scene of battle.

The book contains a number of inaccuracies, some as to names, places and dates, and others in medical statements and facts. But these comparatively slight flaws detract very little from it as a vivid and comprehensive picture of the life of a man active in good deeds and of the time in which he has lived and worked.

Medicoliterary Notes.

Two recent publications from the British press which have received favorable reviews are *Workers' Education in England and the United States,* by Margaret T. Hodgen (Kegan Paul); and *Australian Totemism,* by Géza Róheim. (Allen & Unwin.)

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The *American Journal of Public Health* is publishing regularly a selected public health bibliography which should be valuable to health officers and social workers.

* * *

A recent report issued by the Restaurant Owners' Association of New York states that not only are Americans the greatest meat eaters in the world, but that they also consume a greater number of eggs, about 150 being required annually per capita. Italians bring up the rear among flesh consuming peoples, with about twenty-four pounds a year.

* * *

The United States Bureau of Mines has recently approved the patent of a "selfrescuer," a pocket size gas respirator to protect the wearer from air contaminated with carbon monoxide fumes. The selfrescuer is to be worn chiefly by miners to enable them to escape safely from mines in which fires are burning or in which explosions have occurred. The instrument is constructed so as to provide protection from carbon monoxide for at least thirty minutes.

* * *

A parcels delivery has been organized in England by some of the girls and women who drove motor cycles during the war. It is called the motomessenger service. The drivers wear becoming uniforms and use side cars for the transportation of express material. Some of the girls are skilled mechanics and take care of their vehicles. The service has proved very popular both in the cities and the rural districts.

* * *

Because of the greatly increased prevalence of influenza and the common cold during the past few years, special studies of the subject have been made by a number of health organizations. One of the first reports to be published about these investigations is that of the U. S. Public Health Service as Supplement 48 to *Public Health Reports.* The study is entitled A Review of the Literature on Influenza and the Common Cold. The compiler and writer is Dr. J. G. Townsend.

* * *

Ainsworth Mitchell, British Home Office expert on documents, has recently come forward with proofs that the "casket" letters of Mary Queen of Scots are clever forgeries, probably by her secretary, Sir William Maitland, one of the subtlest and most accomplished rascals of his times. It will be remembered that it was on the testimony apparently revealed in these letters that Mary was sent to the scaffold. The casket included eight love letters to Bothwell, twelve love sonnets, and two contracts of marriage between Mary and Bothwell. Only the sonnets are considered by Mitchell to be genuine. By careful examination and study of handwritings, it was found that the casket letters could not have been written by Mary, and that they are written in a hand which is in many respects similar and sometimes identical with that of Maitland. This discovery means that the world's whole conception of the romantic Queen of Scots may have to be altered.

* * *

In Warsaw, birthplace of Madame Curie, a few weeks ago the cornerstone was laid of a new medical institute and hospital which is being constructed as a monument to her life work.

* * *

What is believed to be the first Chinese junk ever seen in New York sailed into the harbor of this city not long ago. It was manned by a captain, his wife and a small son. It took it two years to reach New York from China, and during the voyage the little boat passed through and resisted all kinds of weather.

* * *

The United States Department of Agriculture has resorted to the tattooing of hogs in order to trace the source of tuberculous cattle. The method is based on the belief that the swine become infected through contact with other animals. By the tattooing method hogs can easily be traced to the farm from which they come, since the mark is stamped in indelible ink and lasts throughout all the processes the carcass of the hog undergoes until it becomes pork, ham and bacon.

* * *

Brazil has rendered almost nil the danger of death from snake bites. An anti venom serum has been discovered by Dr. Vital Brazil, and the Butanan Institute has been established in Sao Paulo for treatment of bitten patients and also to act as a sort of exchange with farmers or individuals throughout Brazil by which they supply the institute with snakes and receive in exchange bottles of the serum. A special department of the institute sends out gratis a trap for catching the snakes without danger and also specially made boxes for their transportation, which has been made free by the railroads.

* * *

In Stuart Pratt Sherman's review of Werner's Brigham Young in a recent issue of *Books,* an amusing incident is cited to illustrate how Young was always at the disposal of his flock for good counsel and advice. "A woman rushed to him in tears to complain that her husband had told her to go to hell. Brigham Young looked at her solemnly and said, 'Well, don't go; don't go.' As advice it is perfect."

* * *

The greatest density of population in the United States is not found in New York, but in Rhode Island, which has 566 people to the square mile. Massachusetts comes next with 479 to the square mile. New Jersey is third with 420, Connecticut fourth with 286, and New York fifth with 217 to the square mile. The district of Columbia with 7,292 to the square mile stands in a class apart. The most thinly populated state is Nevada, with only seven tenths of a citizen for each square mile.—*N. Y. Times.*

* * *

The press has recently reported that Herman Metz, a manufacturer of chemicals, has offered a prize of $100,000 for the invention of a process for producing synthetic opium at a price low enough to wipe out poppy growing in India and China. Mr. Metz stipulates that the inventor as a part of the agreement must relinquish his rights to the process and consent to its use in accordance with the conditions laid down in the International Opium Agreement.

* * *

One of the most heroic accomplishments in the annals of engineering has come to light in the account of a diver who, working singlehanded and in almost complete darkness, saved Winchester Cathedral in England by renewing its foundations. The task consumed almost five and a half years and was performed several feet below the surface in slimy soil and water. The building was foundering because it rested only on an eight foot layer of wet peat. The diver removed this material in sections, substituting concrete which he himself brought down and laid on a firm stratum of gravel, flint and chalk below the peat formation.—*Popular Mechanics.*

* * *

A test has been devised by Dr. Morris S. Viteles of the department of psychology of the University of Pennsylvania by which practically accurate discrimination between safe and unsafe taxi drivers can be made. This test is now being standardized for practical application in the near future. The system of examination will not only test the drivers for their ability to give the maximum amount of safety, but also for their courteous and intelligent service, capacity for attention to what is going on about them, ability to react properly in emergencies, and to estimate correctly the speed of moving objects.

* * *

The new Wisconsin General Hospital has recently announced the establishment of a three year professional nurses' training course to be carried on in connection with the College of Letters and Science of the University of Wisconsin. If at the end of the three years the nurse wishes to receive the degree of B.S. she may receive credit for her university work and complete the requirements for the degree. But she may receive her certificate of nursing after the required three years of nurses' training.

Abstracts from Current Literature

GENITOURINARY DISORDERS

Shock Reactions for Preoperative Testing of the Fragility of the Kidneys.—F. Leguen (*Bulletin de l'Académie de médecine,* October 21, 1924) points out that uremia is one of the most important factors in postoperative complications. It sometimes follows the oliguria which is often noted after operations, but in other instances occurs where there has been little or no reduction of urinary output and the operation has been carried out under regional or local anesthesia. Determination of the blood nitrogen and Ambard's coefficient is of some service as a preoperative test, but does not reveal the capacity of the kidneys to maintain their ordinary function under stress. The writer therefore tests the "fragility" of the renal function by means of a graded series of disturbing procedures, the first of which is ureteral catheterization—usually a preparatory measure in urinary cases. If an attack of fever and pain follows, the blood nitrogen and coefficient are determined again on the next day. Normally, these should both have been improved by the febrile reaction, but very frequently, they are found higher than before. Where such a spontaneous reaction is not obtained, the next step is the intravenous injection of 250 grams of thirty per cent. glucose solution. This injection, sometimes therapeutically useful, generally causes a chill, fever and notable systemic disturbance. The blood nitrogen and coefficient are then taken again, and often show a marked rise, while the general disturbance persists for several days. The writer's experience with these tests has shown that the blood nitrogen exhibits actual steadiness only in perfect health. In all those whose kidneys are no longer quite sound, the least disturbance reacts on the blood nitrogen. There is present, then, a renal fragility manifesting the low grade of nephritis common in the elderly, otherwise undetectable and the evidences of which are concealed by apparent health and the efficacy of strict dieting. If the glucose injection has caused a pronounced rise of blood nitrogen and general disturbance, immediate operation would entail undue risk. Patients with relatively normal blood nitrogen and coefficient sometimes show a rise of the former to 1.5 after the injection. Satisfactory tests do not insure absence of shock from the operation, but nevertheless afford a useful factor of safety. Where the reaction to the tests is poor, the operation need not necessarily be abandoned altogether, but should be postponed to a time when more favorable conditions exist.

The Four Hour Urine Test.—Henry M. Feinblatt (*Journal of Laboratory and Clinical Medicine,* June 1924) bases the present report on comparative observations on the specific gravity and the chloride content in 24-hour and four hour urine specimens from sixty apparently healthy medical students. The specific gravity readings were quite parallel in the two series; in more than half the specimens agreeing within two points, and in eighty-three per cent. the variation did not exceed four points; there was also a parallelism in the chloride output; in forty-five per cent. of the comparisons the difference did not exceed two gm. of chloride, and in eighty-two per cent. it was not greater than four gm. The four hour urine test is suggested with the idea of possibly replacing the routine examination of a single chance specimen, which has no value other than a quantitative one, and that it might serve as a substitute for the twenty-four hour examination when this specimen cannot be conveniently collected. If further comparative analyses on the other urinary constituents show a like parallelism, the four hour urine test would apparently be of value in meeting the conditions which suggested its employment.

Persistent Priapism.—Herdman Porter and R. H. Jocelyn Swan (*Lancet,* April 5, 1924) report a case of persistent priapism without any ascertainable cause. Intrathecal anesthesia caused no improvement in the condition. It was therefore decided to incise the crura of the penis rather than the penile corpora cavernosa. An incision was made obliquely downward and outward on the left side over the public ramus and the erector penis muscle was exposed and incised; the crus penis was much thickened. This was incised in the line of the wound, when dark, semiclotted blood slowly exuded. By pressure on the crus and on the penile corpora cavernosa a quantity of the same viscid dark blood was expressed, assisted by the passage of closed forceps into the crus in a forward direction. A similar procedure was adopted on the right side with the same results, and the whole penis became quite flaccid. Each crus was drained and the wounds were lightly sutured. The incision of the penile corpora cavernosa was not necessary. The patient recovered without the return of the priapism, though the erect penis was drawn to the side. In some cases it would appear that direct attack upon the crura is preferable.

An Unexplained Diazo Color Reaction in Uremic Sera.—On performing the indirect test (with alcoholic solution) of Ehrlich's diazo reaction on a number of patients suffering with nephritis, C. H. Andrews (*Lancet,* March 22, 1924) discovered an orange buff color, which gradually deepened during a period of twenty-four hours. In order to differentiate this from a possible azobilirubin reaction, an alkaline solution was added and a cherry pink color appeared, which disappeared after a few minutes. This finding was obtained in a number of severe uremic cases, but in no others. All of the cases had at least 220 mg. of urea per hundred cubic centimetres of blood. The uremias in these causes were of different origins and showed various clinical types, even without twitching or convulsions.

Retroperitoneal Catheterization of the Ureters.—A. Fullerton, (*British Journal of Surgery,* October, 1924) asserts that, in case it should be impossible to catheterize the ureters by the ordinary method, the ureter can be exposed for catheterization by stripping inwards the peritoneum after an incision in the parietes similar to that used for appendicectomy. In tuberculosis of the kidney, if a thickened ureter be found on one side, it need not be further disturbed. All that is necessary is to obtain a specimen from the opposite ureter. With careful technic and accurate suturing there need be no extravasation of urine. The actual quantity of urine secreted by a kidney can be ascertained by using a catheter of sufficient calibre to fit the ureter snugly, or by compressing the ureter round the catheter so as to avoid leakage by the side of the latter. The specimens so obtained are free from any contamination from the bladder contents.

Turpentine by Injection in Epididymitis.—A. A. Wren and J. L. Tenenbaum (*Surgery, Gynecology and Obstetrics,* October, 1924) submit their report of a hundred cases subjected to turpentine treatment exclusively to determine its therapeutic value. An emulsion of twenty per cent. turpentine in olive oil was administered upon the pelvic bone fascia at intervals of two days, each injection containing from one half to one cubic centimetre of the emulsion.

The injections were followed, in the majority of the cases, by analgesia and involution of the tumorlike swelling. In many instances a single injection sufficed to relieve the pain in from six to twelve hours after the injection. On the average, from three to four injections were administered in an individual case. The authors' experience, based on two years of careful clinical observation, leads to the conclusion that turpentine by injection is of value in the treatment of epididymitis.

Gonorrheal Calcaneal Periostosis.—C. C. Mape (*International Journal of Medicine and Surgery,* September, 1924) asserts that many ambiguities and inaccuracies of expression and description in modern medicochirurgical nomenclature originated in ancient mythical conceptions based upon intangible premises. The terms gonococcus, gonorrhea, gonorrheal, etc., being totally unscientific, inexact, absurd, should be discontinued. There exists no relationship between Neisserian invasion and osseous excrescences in any anatomical location, and such a contention is but an exhibition of pathological ignorance. Calcaneal periostosis, the only type hitherto presumed to be due to Neisserian invasion, occurs most frequently in individuals with a negative venereal history. The essential etiological factor responsible for osseous hypernutrition with resulting exostotic or osteophytic development remains unknown. The treatment of calcaneal periostosis is distinctly surgical, the administration of vaccines, phylacogens, etc., representing the acme of therapeutic absurdity.

Features of Urinary Calculi.—H. P. Winsbury White (*British Journal of Surgery,* July, 1924) makes a study of their radiographic features in relation to their chemical composition and structure, referring especially to renal calculi. Although holding that an exploratory operation is rarely justified when a radiogram is negative, he advises cystoscopy wherever possible for the reason that radiograms sometimes fail to demonstrate vesical calculi consisting largely of uric acid or ammonium urate. His chemical analyses lead him to conclude that the relative opacity of calculi of equal depth depends upon the atomic or molecular weights of their constituents. The opacity of a calculus is determined by the nature of its constituents, its structure, and its thickness. Calcium oxalate and calcium phosphate give very good shadows. They are very common constituents of urinary calculi. The high relative opacity is due to the high atomic weight of the calcium present in these salts. All the other common urinary salts give relatively poor shadows. They include the urates, uric acid, and triple phosphate. Cystine and xanthine also give poor shadows in the pure state, but of slightly more opacity than the foregoing owing to the sulphur they contain. It is rare for any of the foregoing substances to be the sole constituent of a stone. This applies to cystine as well as the more common varieties. There is frequently calcium oxalate or phosphate present. The figures of different observers giving the relative incidence of different salts in calculi have frequently been conflicting. Recent observers, however, are agreed upon the preponderance of calcium oxalate in renal and ureteric stones, and of uric acid and urates in bladder stones. Phosphate is found in larger proportions as a constituent of bladder stone than of renal stone. It frequently surrounds a nucleus of oxalate, or uric acid or urate. Stones of uric acid or urate in the kidney or ureter soon become mixed with calcium salts, after which they can be identified by radiogram.

Kidney Involvement from Prostatic Hypertrophy.—A. D. Bush (*Journal of Laboratory and Clinical Medicine,* August, 1924), in order to test the theory that kidney involvement accompanying prostatic hypertrophy is due to back pressure from the bladder through the ureters, performed experiments on dogs (whose vesical architecture is very much like that of man) with the object of obtaining a reflux if reasonably probable, which yielded no refluxes even under excessive intravesical pressures. A closely related origin of nephritic tissue and vesical trigone is shown by embryological studies. Clinical data show a closely coordinated innervation of kidney, ureter, and trigone; experimental data indicate that electric stimulation of the proximal end of the cut hypogastric nerve affects the functional activity of the kidney. From these several findings the conclusion is reached that uncomplicated kidney dysfunction, accompanying prostatic hypertrophy, is a condition primarily due to neural reflexes coming from the area of the trigone by way of the hypogastric afferent nerves and then out through the eleventh and twelfth thoracic autonomic nerves to the kidneys.

Undescended Testicle.—C. G. Mixter (*Surgery, Gynecology and Obstetrics,* September, 1924) says that operations for undescended testicle in childhood may be expected to yield seventy-five to eighty per cent. of satisfactory results; that is to say, the testicle remains in the scrotum and subsequent atrophy does not ensue. To attain this result, the spermatic circulation should be preserved and the cord lengthened sufficiently to allow the testicle to be placed in the scrotum without tension. In a certain number of cases in particular those of the intraabdominal variety, it will be necessary to section the spermatic vessels. Where this procedure is unavoidable, atrophy occurs in eighty five per cent. of the testes. It is indicated in only about ten per cent. of all cases. Atrophy may ensue where the spermatic vessels are not divided. This is probably due to accidental tearing of some of the trunks at operation or inclusion in the stitches, if the cord is anchored to Poupart's ligament. Operation may be undertaken at any age with the expectation of a good result, if the accompanying hernia becomes troublesome or other indications arise. The preferable age for operation is between five and twelve years. At an earlier age the structures are so delicate that injury to the spermatic vessels is difficult to avoid. Orchidectomy should not be done in childhood. Replacement of the testes in the abdomen should also be avoided on account of the risk of a future malignancy. In even the most difficult case, section of the spermatic vessels and transposition of the vas and its accompanying vessels behind the deep epigastric will make it possible to place the testis in the scrotum.

The examination of cases in which the patients were operated on in childhood with preservation of the spermatic circulation and have passed the age of puberty, frequently reveal on palpation a testicle that has apparently developed normally. From this series no light has been thrown on the spermatogenetic function of the undescended testis subsequent to an operation performed before puberty. It is hoped that later the bilateral cases of this type may afford some valuable data. In no instance has a recurrence of the hernia been observed.

Venesection Blood Transfusion in Anuria.—C. A. Bower and H. R. Trattner (*Surgery, Gynecology and Obstetrics,* August, 1924), draw attention to their success in the use of a repeated venesection transfusion method in a case of acute nephritis with anuria. They conclude therefrom that repeated venesection transfusion is a logical procedure in acute conditions interfering with the permeability of the kidneys, in that it lowers the amount of accumulated catabolic products in the blood, not only by frequent removal but also by repeated dilution of the remaining circulating blood. It is a more logical procedure than a single venesection transfusion, since it is inconceivable that the tissues could be detoxified for a sufficient length of time to admit of much benefit. It tides the patient over a critical period until the kidneys can again resume their function. It can be used as an accessory measure but should not supplant renal decapsulation which is a recognized useful procedure in nephritis. The frequency and number given in any case should depend upon the clinical condition of the patient, the blood chemistry findings, and the quantity of urine excreted in twenty-four hours. We ascribe an important rôle to repeated venesection transfusion in the recovery of our patient, since there was no tension that could be relieved by decapsulation, and no diuretic effect was obtained following the operation.

Renal Tumors.—G. Phillips (*International Journal of Medicine and Surgery,* July, 1924) finds that tumors of the kidney is generally of a most malignant nature. However, there is a period in the development of these tumors when they are clinically benign. Of the early signs urinary bleeding is the most important. This is the point when the practitioner's responsibility is greatest. A patient cannot be urged too strongly in the presence of this sign to consult the urologist immediately. Even then the amount of information to be obtained is not great and it takes one's every resource to arrive at a diagnosis. If the bleeding kidney can be identified, great progress has been made. Should the kidney shadow or pyelogram suggest even slightly a kidney tumor the writer is of the opinion that sufficient warant has been obtained to investigate surgically, and if simple exposure of the organ gives no information, then nephrotomy or even nephrectomy is indicated. By the latter procedure, of course, an organ not deserving it will sometimes be sacrificed—say a chronic contracted kidney, or a case of chronic nephritis, or one having a simple varix. But this risk is much less than allowing to remain a bleeding tender organ, the cause of which is unknown.

Before any attempt is made to remove a neoplastic kidney there should first be considered the practicability of performing a ligation of its pedicle, especially the vascular portion, by either the transperitoneal or paraperitoneal route. With that accomplished an operator may proceed with a free conscience with the nephrectomy, either through the same incision or by means of a lumbar incision.

Treatment of Stenosed Urinary Meatus.—A. L. Wolbarst (*International Journal of Medicine and Surgery,* September, 1924) discusses the pathology of this disease and recommends meatotomy for both acute inflammatory and non inflammatory conditions thereof. His operative technic follows.

A complete meatotomy requires that both external and internal orifices shall be incised to such an extent that a metal bulbous bougie with a caliber of 32 French can be inserted easily into the urethra, beyond the fossa navicularis. The incision is made in the middle line, usually along the floor of the meatus; when, however, the meatus is inferiorly situated so that an extensive incision along its floor will create an artificial hypospadias, it is desirable, in fact, necessary, to cut both superior and inferior margins of the meatus, thereby avoiding the creation of hypospadias.

Local anesthesia is employed, though in extremely sensi-

tive patients a general anesthetic may be necessary. Textbooks speak of producing anesthesia by the insertion within the fossa of a plug of absorbent cotton saturated in a one or two per cent. solution of novocain. This method has not been satisfactory in my experience. My personal preference is for the use of a much weaker solution—one eighth or one tenth per cent. injected into the tissue surrounding the site of the incision; this gives a much more satisfactory anesthesia.

It is a highly desirable practice to bring the mucous membrane of the urethra in contact with the skin by means of several catgut or horsehair sutures. This procedure usually produces a much more satisfactory result, diminishes bleeding and encourages rapid healing.

Vital Staining of the Bladder Mucosa in Man with Methylene Blue.—G. Huber-Pestalozzi (*Schweizer medizinische Wochenschrift,* September 18, 1924) was enabled to gain a better insight into the pathological processes in the bladder by filling the bladder with a five per cent. solution of methylene blue, preceded and followed by irrigation with a sterile normal salt solution. No discoloration was noted in five healthy male bladders, but the discoloration was found in five female bladders, which had never been diseased and were entirely asymptomatic, also in four cases of a previously existing cystitis (now asymptomatic) and in four cases of existing chronic cystitis. The region of the trigone was stained in the majority of the cases, chiefly females. The author maintains that this is not due to vital staining, but rather a discoloration of dead or dying cells, which are still adherent firmly to the tissue. Heretofore it has not been known that such desquamations could occur in practically healthy bladders. The process is the most intensive in the region of the trigone and its immediate vicinity (vesical sphincter), that is, in the region of the most marked mechanical work. The remaining parts of the bladder show this discoloration only rarely.

New Treatment for Tuberculosis of the Bladder.—Marion and Blanc (*Presse médicale,* March 7, 1925) have had very gratifying results with instillations of methylene blue into the bladder in the phenomena of cystitis accompanying renal tuberculosis, alike in operated and in inoperable patients. There are no contraindications to the procedure. Ten to fifteen mils of a warmed solution of methylene blue in normal saline solution are injected. The strength of the solution is one per cent. in average cases; in acute cases, or after the condition has been considerably improved, a 0.5 per cent. seolution is used. If the bladder contains much débris, it should first be cleaned out by irrigations. The instillation is repeated on alternate days in average cases and every three days in acute cases. Four or five instillations are sufficient to bring relief for a considerable time. It is better to resume the treatment when symptoms reappear than to employ protracted treatment. Methylene blue by the mouth must be continued at the same time. The drug acts both as an antiseptic and an analgesic. Inspection of the bladder shows that the drug becomes fixed exclusively in the diseased areas. There have been no failures of this procedure, which produces a rapid and excellent effect on frequency, pain in the bladder and urethra, and mild hematuria. The bladder capacity is notably increased. Improvement is less pronounced in crystitis with incontinence. One patient, who voided every half hour, was enabled, after three weeks, to hold his urine for six hours, although the case was one of bilateral renal involvement precluding nephrectomy.

Treatment of Chancroid with Tartar Emetic Solution Intravenously.—Herman Goodman (*Journal of Urology,* April, 1925) proposes the use of solutions of tartar emetic intravenously in the treatment of chancroid, following his experiences with this drug in the tropics in the therapy of granuloma inguinale. In his experience, the diagnosis of chancroid most often rests on clinical observation; absence of Spirocheta pallida on dark field examination; and absence of the socalled Calimato bacterium granulomatis of inguinal granuloma. The search for Ducrey bacilli in smears has not been fruitful, and the utilization of culture methods has not been routine. The Wassermann reaction is of negative aid. The patients have presented themselves for treatment after extension to the draining glands, and several after ineffective antisyphilitic treatment. Other patients had been under observation for urethritis because of a purulent discharge exuding from an acquired phimotic prepuce. Goodman uses the actual cautery knife to make a dorsal slit when indicated rather than the cold knife because of the possible danger of opening blood and lymph channels. Local cleanliness with soap and water, and immersion of the affected part in warmed mercuric chloride was insisted upon.

The innovation in treatment is the use intravenously of solutions of tartar emetic or antimony potassium tartrate. The drug is given in concentration of 1:100. A commercial sterilized one per cent. solution, standardized and biologically tested, contained in ten c.c. hermetically sealed ampoules, has been used. The initial dose intravenously has been five c.c. of the 1:100 solution, given once every second day or at longer intervals to once in five days. The number of injections has varied from four to eight. The dose may be increased by one c.c. at each injection, but no dose greater than twelve c.c. has been administered. There have been no ill effects.

The use of antimony potassium tartrate in chancroid is recited in case histories. It is hoped that the experiences of others will warrant further publication.

Leucoplakia of the Kidney Pelvis.—F. Hinman, A. A. Kutzmann and T. E. Gibson (*Surgery, Gynecology and Obstetrics,* October, 1924) report two new cases of this complication, which, together with other reported cases, lead them to the following conclusions:

1. Leucoplakia of the urinary tract may be defined as an epidermoid transformation of the mucosa, in plaques usually, with excessive keratinization and desquamation. The condition is generally associated with longstanding inflammation, calculus formation or other irritation, which seem to be contributory factors in its causation.

2. The etiology of leucoplakia is unknown. The most common theories are that it is a true metaplasia on the basis of chronic inflammation and irritation, or the biological process of adaptation to environment in the form of protective cornification; or that leucoplakia of the urinary tract arises on the basis of misplaced embryonal rests of primitive ectoderm.

3. Leucoplakia of the renal pelvis occurs about equally often in both sexes and it may occur at any age. The greatest frequency is in the fourth decade.

4. The symptomatology is that of urinary tract infection (cystitis, pyelitis, pyelonephritis, pyonephrosis) and urinary lithiasis, conditions with which it is usually assocated.

5. The treatment of choice is nephrectomy, since the disease is incurable and precancerous. Palliative measures, in the form of pelvic lavage, are probably beneficial only in subduing infection and in that way possibly delaying the progress of the condition. The value of radiotherapy is not known. Fulguration may be of value in leucoplakia of the bladder, but as yet no reports of its use have been found.

Nitrite Reaction in Urine.—Wilfried Loewenstein (*Wiener klinische Wochenschrift,* February 7, 1924) proposes a test from which practical conclusions may be drawn which are of importance to the specialist and simplify the work of the general practitioner. If alphanaphthylamin is added to a cloudy urine in a test tube, three different results may be observed: 1, the cloudiness may disappear without a change in color, as is the case in phosphaturia or carbonaturia (reagent contains acetic acid); 2, there may be a positive result, showing a cherry red discoloration and indicating the presence of infection with nitriteforming bacteria, such as staphylococci, colon bacilli, proteus, aerogenes lactis and others; 3, the cloudiness may persist without a discoloration. The latter finding is explainable only in combination with other tests. There may either be urinary retention, in which case the disintegration has taken place beyond the nitrites in spite of the presence of nitrite forming bacteria, or there may be an infection with nonnitrite forming bacteria, such as streptococci, tubercle bacilli and gonococci. It must also be taken into consideration that the appearance of the reaction may possibly have been inhibited in the presence of nitrite forming bacteria. In mixed infection (gonococcus plus nitrite forming bacteria) a positive result may be assumed to indicate the disappearance of the gonococci and the predominance of other varieties of bacteria. These results show that in the examination of cloudy urine the substitution of the Griess reagent (containing acetic acid) has advantages over the simple acetic acid test.

Unilateral Diuresis.—Andrew Fullerton (*British Medical Journal,* February 2, 1924) advances the theory that the diminution of the specific gravity of the urine on the affected side is of great value in diagnosis. A small irritating stone in the pelvis of the kidney may produce unilateral diuresis and aid in the diagnosis of renal disturbance in the absence of pus or blood in the urine. If the renal parenchyma is involved only slightly, the clinical picture resembles that of stone or early tubercle, showing an increase in the amount of urine of low specific gravity on the affected side. If the stone is associated with pyelitis, the specific gravity and the flow of urine soon become equal on the two sides after removal of the cause. Then the renal parenchyma is affected by disease or a neoplasm, the specific gravity is diminished on the affected side, but the flow is diminished with the progressive involvement on the affected side, until the sound kidney does most or all of the work, as in the later stages of renal stone, tuberculosis, pyelonephritis, cystic kidney, hydronephrosis, pyonephrosis and neoplasm. In essential renal hematuria the diminution in the specific gravity is less likely to occur on the affected side because of the absence of gross kidney changes. A difference on specific gravity on the two sides favors the diagnosis of new growth rather than the less serious complaint.

Risks of Prostatectomy.—Kenneth M. Walker (*Practitioner,* May, 1924) thus summarizes his paper. In all cases in which well defined signs of obstruction exist operative treatment is indicated with as little delay as possible, since the persistence of obstruction constitutes a menace to the kidneys. Even in the presence of associated lesions, such as those of the heart and lungs, and amongst those of advanced years, prostatectomy offers a better chance of survival than catheter life. The mere existence of enlargement without symptoms is not in itself an indication for operation, but it undoubtedly constitutes an indication for maintaining the patient under close observation in order that the earliest signs of obstruction may be detected. In all cases in which sepsis is present, or in which a careful investigation of the kidneys gives indication of impaired deficiency, it is absolutely essential that these complications should be dealt with by means of preliminary drainage before any attempt is made to enucleate the prostate.

Hereditary and Familial Nephritis.—J. Eason, G. L. Malcolm Smith and George Buchanan (*Lancet,* September 27, 1924) draw the following conclusions from their experimental investigations:

1. Nephritis may be hereditary, familial, or congenital, as shown by the cases described in the literature.

2. A familial predisposition to nephritis seems to exist in a series of cases instanced by the authors, and notably in two families.

3. In one family there was an association of apoplexy and nephritis, six members of the family being affected by one or both. The discovered onset was at or after middle life.

4. In the second family there were seven cases, of which five were discovered in childhood or adolescence. Four of the cases in this family were diagnosed within a few weeks of one another. That the actual origin was not recent, but of some years' standing, is evident from the fact that the arteries in three were thickened, the blood pressure high, and the nonprotein nitrogen of the blood high.

5. No definite etiological factor could be found in these cases to account for either the nephritis, high blood pressure, or thickened arteries. Syphilis is discounted by a negative Wassermann reaction in all cases. There is no history of scarlet fever or influenza in any of the cases.

6. In one case there is a definite history of chill immediately preceding the onset of the disease.

7. Pure growth of nonhemolytic streptococci were obtained from the blood and urine of two cases on admission to the hospital.

8. Blood cultures carried out four months later yielded no growths.

9. A streptococcus was obtained twice from the urine of one patient while in the hospital, and again on the return for a later examination.

10. A feature of note in primary cultures was the delay and feeble nature of the growth between the third and sixth day of incubation.

11. The types of streptococci isolated from the blood and urine were biochemically identical with those obtained from the teeth, tonsils, and tonsillar region. Such streptococci commonly live as harmless saprophytes in the mouth and throat, but may become parasitic and associate themselves with subacute infections.

12. In addition to the presence of intrinsic weakness causing a *locus minoris resistentiae* in the kidney, a possible extrinsic factor in the recurrent attacks of nephritis may possibly be due to streptococcal infections.

13. There is considerable evidence for the conclusion that the teeth and tonsils may be regarded as among the important primary sources of infection, and probable portals of entry for hematogenous infection. It is possible that repeated infections may occur at such times when the normal resistance of the tonsils and tissues is lowered from local or general causes. Such infections may exercise an exacerbating influence in the course of the disease.

14. The failure to confirm the result of the first bacteriological examination of the blood, and the negative findings in two of the cases, suggest a local infection producing disease by periodic systemic invasion—that is, a transient bacteriemia with rapid localization of the invading organism in such organs most susceptible to its power of invasion, resulting in a focal expression of infection. In the family studied the kidney appears to be singularly predisposed to infection and the most susceptible organ.

15. Experimental evidence is given on the causation of nephritis by a nonhemolytic streptococcus isolated from cases of subacute nephritis.

Fatal Azotemia with Histologically Normal Kidneys.—A. Lemierre, P. N. Deschamps and E. Bernard (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* June 19, 1924) all attention to the incongruity of cases of renal insufficiency in which nitrogen retention develops in the absence of edema or high blood pressure and with but slight changes in the urine. They report the case of a plumber aged twenty-four years, without anything suggestive in the past medical history, in whom diarrhea had been present for three weeks, followed by abdominal pain, vomiting and more copious diarrhea, restlessness and finally stupor. Admitted to a hospital at this juncture, the patient succumbed two days later in progressive coma with hypothermia. Blood examination on the day before death showed 5.3 parts of urea in 1000, and a few hours before death, 6.46 parts. Yet the kidneys were found practically normal macroscopically as well as microscopically. The only lesions found elsewhere were a recent infarct in the right lung and a few hemorrhagic suffusions in the stomach. The nitrogen retention had been more particularly a retention of urea, the latter having risen to over fifteen times the normal in the blood, and the residual nitrogen only to four times the normal. The outstanding clinical features of this case of apparent acute nephritis were the respiratory rhythm, hypothermia and the condition of the urine. The breathing was identical with the type described by Kussmaul in diabetic coma, being regular, with great amplitude of inspiration and noisy expiration; the rate rose gradually from eighteen to thirty-two per minute. The low temperature, 35.5° C., has been pointed to by several authors as a true symptom of azotemia. Instead of anuria or marked oliguria, with marked changes in the urine, as might have been expected, the patient yielded 600 mils of urine on catheterization on the day preceding death, and 500 mils on the day of death, and the bladder was found full at the autopsy. The urine was pale, clear, with but little albumin, and contained neither casts nor blood. The urea content of the urine on the last day was but 1.2 per cent., showing a reduced urea concentrating power on the part of the kidneys. The underlying cause of this serious disturbance of renal function in the absence of pathologic lesions remained obscure. Though the patient was a plumber, there were no clinical evidences of lead poisoning.

Relation of Gonorrheal Proctitis in Male Infants to Hospital Epidemics of Vulvovaginitis.—Albert H. Byfield and Mark L. Floyd (*Archives of Pediatrics,* October, 1924) show that rectal gonorrhea in male infants may occur in the course of a ward epidemic and not cause sufficient signs and symptoms to arouse suspicion that this trouble is present. Such infection may be the source of repeated late outbreaks when the epidemic is believed to have been stamped out. The rectal thermometer is probably the carrier. It is always well to check up in hospitals on the custom of taking temperature. Trays with individual receptacles for thermometers or individual containers for thermometers should always be used in baby's ward.

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Medicolegal Notes.

PHYSICIAN'S TESTIMONY OF EXAMINATION BASED ON PATIENT'S STATEMENTS OF SYMPTOMS HELD INADMISSIBLE

Where one of the injuries claimed as resulting from an accident was defective hearing, a medical expert, who had made on the day preceding the trial an examination of the plaintiff for the sole purpose of testifying at the trial, testified that he had made a series of tests to establish whether the plaintiff had normal hearing, and whether his auditory nerve was normal, but that he was unable to reach a conclusion on these matters without the aid of subjective symptoms. The New Jersey Supreme Court held, Hutchinson v. Jersey Central Traction R. Co., 126 Atl., 482, that it was prejudicial error to admit the testimony of the witness as to the result of his examination so far as it included and was based upon statements made to him by the plaintiff as to the latter's symptoms and opinions.

EXPERT MEDICAL TESTIMONY IN MALPRACTICE CASES

In a malpractice case, the negligence consisting in leaving a sponge in the patient's abdominal cavity after an operation it was argued for the defendant that medical experts are the only persons qualified to testify whether an operation was negligently performed, and that the handling of the sponges in this case was but a part of the operation.

The Circuit Court of Appeals, Eighth Circuit, however, Laughlin v. Christensen, 1 Fed. (2nd) 215, holds that in such a case the testimony of medical experts is not essential. The court says that it is true that there is a large class of malpractice cases in which the question or matter under investigation is so intricate and abstruse, or so little understood, that ordinary jurors would in all probability know nothing about it, but must be guided by opinions of witnesses having special knowledge. In this class of cases the plaintiff fails to make a case for the jury, in the absence of testimony of a properly qualified expert witness.

The court goes on to say, however, that there are two other classes of cases dealing with the admission of expert testimony on the issue of negligence. 1. Those in which the question or matter under investigation is so simple that the jurors are as well able as experts to pass upon the same. Admission of expert testimony in this class of cases is held to be error. 2. Those cases in which the question or matter under investigation is of such character that the opinion of expert witnesses thereon, though not indispensable, may yet be of material assistance to the jury. In this class of cases the admission or rejection of expert testimony rests in the sound discretion of the court.

Furthermore, the court said, it is not a universal rule, even when the alleged negligence of medical men is under consideration, that testimony by experts is indispensable. In the "sponge" cases called to the court's attention, it said that it did not find one in which such a rule was laid down or applied. In the court's opinion, a scientific exposition of the subject was not necessary to enable the jury to pass upon the question whether the sponge was negligently left in plaintiff's abdominal cavity by defendant in the case before the court, no question of science being involved. The question whether defendant and his assistant did in fact count the sponges after the operation and find the same number as they had before the operation required no technical skill or special training to decide. The court was not called upon to decide whether expert testimony would have been admissible, if offered, on the part of plaintiff.

PROOF OF INTENT IN PROSECUTION FOR ILLEGAL SALE OF MORPHINE BY PHYSICIAN

The Circuit Court of Appeals, Fifth Circuit, holds, Williams v. United States, 294 Fed. 682, that, on the trial of a physician for violation of the Harrison Act by selling morphine not in the regular course of his professional practice, or for the treatment of any disease, but to satisfy the craving of an addict, it was proper to allow proof that the accused had either sold or administered morphine on previous occasions, as bearing upon his intent. "A practicing physician does not violate the act in question if he merely dispenses morphine 'in the course of his professional practice only,' but it is a violation of the law for a physician to dispense morphine for the purpose of gratifying the appetites of those addicted to the use of it. The evidence of other sales was therefore properly admitted to show knowledge and an unlawful intent. A dealer, as distinguished from a physician, is authorized to sell opium or its derivatives only upon a written order, and if he has not such order his intent is immaterial."

It was held unobjectionable for the indictment to describe morphine sulphate as morphine, by which name the derivative is commonly known.

LIABILITY FOR REQUESTED OPERATION ON DEFENDANT'S SON

In an action to recover for services as physician and surgeon to the defendant's son, where the petition charged that the services were rendered at the instance and request of the defendant, it was held, Bailey v. Yowell (Mo. App.) 266 S. W. 324, that whether the son was a minor or of full age was immaterial. Instructions that if the son was a minor and the father, the defendant, authorized another physician to take him to the plaintiff for treatment, or if they believed that the son was over 21 years of age and the father told the other physician to have the operation performed and he would pay for it, they should find for the plaintiff, were held not prejudicial to the defendant. A requested instruction which would have required the jury to find that the son was under age, and that the father had authorized the operation and agreed to pay for it, before they could find for the plaintiff, was held properly refused.

PHYSICIAN HELD NOT NEGLIGENT IN RELYING ON ATTENDANT TO WRAP HOT FLATIRONS PROPERLY

A physician called to attend a patient directed that hot flatirons be placed about her. A woman employed by the patient's husband to attend her wrapped up the irons and placed them in the bed. Two became unwrapped and the patient was badly burned. In an action against the physician for malpractice, the Minnesota Supreme Court held, Olson v. Bolstad, 201 N. W. 918, that the defendant was not chargeable with negligence in relying upon the attendant to wrap them properly.

HYPOTHETICAL QUESTIONS

The Illinois Supreme Court holds, People v. Pigatti, 314 Ill. 626, 145 N. E. 608, that it is proper to allow a hypothetical question to a medical witness although it does not contain all the facts in evidence in the case, where there is evidence in the case as to each fact stated in the question.

PRIVILEGED COMMUNICATIONS

The plaintiff in a personal injury case had received medical attention from a physician. Another physician was present, and at the request of the attending physician participated in the examination of the plaintiff. The Minnesota Supreme Court held, Leonczak v. Minneapolis, St. P. v. S. S. M. Ry. Co., 201 N. W. 551, that the information required by the latter physician was privileged within the Minnesota statute.

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Multiple Stage Operation Versus the Immediate Excision of the Pathology*

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Since Lister's epoch making discovery of antisepsis, which showed the way to asepsis, the progress of surgery may be divided into three eras, namely: 1, the era of operative discoveries; 2, the era of mechanical advancement; and 3, the statistical era.

The first era, that of operative discovery, was the era in which many of our now standard operations were developed. This was undoubtedly the most fascinating period of surgery. Imaginative and master minds were constantly finding new fields. Men like Murphy and Halsted whose names are attached to many operations were the pioneers in that era.

The next era, the one of mechanical advancement, was in a way a retrograde one. The surgeon then became more of a carpenter. Elaborate mechanical aids were advocated for many types of surgical procedures. Many of these aids, such as elaborate bone plates, while remarkable inventions, were foreign bodies too large to be handled easily by the human organism. Probably the greatest advancements in this era were the mechanical devices invented for diagnosis. The cystoscope, the proctoscope and the bronchoscope have revolutionized the diagnosis in their respective fields. During this period, also, the x ray advanced still further the progress of diagnosis and treatment of surgical diseases.

The third era of which I wish to speak may be termed the statistical era. In it, through the study of mortality, statistics and analysis of the followup results, we have realized that many operative procedures, while successful surgically were failures in that patients either died subsequently or lived a life of discomfort. Codman, Crile and the Mayos have been pioneers in this country in this advance. A study of the gradually accumulated statistics of the present day extensive operations, which are the outgrowth of these three eras, reveals a relatively high mortality in many surgical procedures. Efforts have been made by all surgeons to reduce this high mortality.

We have come to realize that a patient must be prepared for operative procedure by gradations. Many patients, who would otherwise be lost, can be saved by following this line of procedure. The surgeon now must have some knowledge of blood chemistry, biology and physiology. He is no longer the carpenter who might be directed by the medical man to do a certain mechanical procedure. The surgeon must consider the individual patient and the disease in order to plan his procedure. It has been the tendency of all of us to attempt to remove obvious pathology, often at the sacrifice of the patient's life. It is much wiser to do frequent preparatory operations, eventually saving a patient than to do one large operation with subsequent mortality.

I thought it might be of interest for a gathering of this kind to review the various preoperative tests, preoperative treatments and multiple stage operations that have crept into surgery during the last few years.

If one begins at the head and works downward, one is surprised to see what a large group will be encountered. It is obvious that in a hasty résumé, many processes which would fall in this group will be omitted. If, however, we start at the skull we may begin with brain abscess.

1. *Brain abscess.*—Is fatal in a large percentage of cases but we have found that the mortality can be greatly reduced by doing a preliminary craniotomy, opening the dura and packing. This creates adhesions, and when later at a second stage the abscess is drained, the brain does not recede, further infection is not so probable, and meningitis may be prevented.

2. *Cervical adenitis.*—Much discussion has occurred in recent years between pediatrists and surgeons concerning the proper operative procedure in tuberculous adenitis where large tonsils are present. The present consensus of opinion is that it is wiser first to remove the tonsils, and later, if necessary, the nodes of the neck. It has been argued that if the nodes are first excised and the tonsils later removed, the damage to the lymphatic structure of the neck is too great. It has also been observed, clinically, that occasionally enlarged nodes recede after tonsillectomy. Preliminary x ray therapy is still in its development, and one must believe that in the future most tuberculous nodes should be treated for a period of time by x ray. Many operations will then be avoided.

3. *Thyroid.*—Undoubtedly the greatest progress

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of many stage operations or preoperative therapy is exemplified in diseases of the thyroid. Mortality of exophthalmic goitre or toxic adenoma has been tremendously reduced. The basal metabolism test has given us a knowledge of the toxicity of a patient. Data derived from the basal metabolism and the clinical study of a patient with hyperthyroidism have shown us that certain patients will not stand a prolonged operative ordeal. Mann and others have shown that by administering Lugol's solution, we may reduce basal metabolism ten to fifteen points. At this stage one or both superior thyroid arteries may be ligated under local anesthesia with a relative impunity. The maximum gain from ligation of the superior poles of the thyroid persists for about three months, and then begins to decline. A thyroidectomy can be performed three months after ligation of the superior poles, and the patient saved. Often in the study of a toxic goitre we find it advisable to remove infected teeth and tonsils in the interval stage between ligation of thyroids and thyroidectomy. There is no question that some hyperthyroid patients can now be cured by surgery by multiple stage operations, where previously an immediate thyroidectomy would have been followed by serious consequences.

4. *Empyema.*—The war with its terrific operative mortality in training camps taught us a great deal about certain types of empyema. We have learned that in streptococcus empyema cases an early thoracotomy is almost always fatal. It is necessary to have a certain amount of pleural exudate with adhesions in order to stabilize the mediastinum. If we open the chest too soon, the heart and bloodvessels are dislocated by the collapse of the lung, and immediate death may occur. In these cases thoracentesis repeated frequently, with small amounts removed, can later safely be followed by a thoracotomy. In desperately ill children, with postpneumonic empyema, a preliminary intercostal thoracotomy under local anesthesia will reduce the operative mortality. At a later stage, when the child is safely over the acute empyema, a rib resection may be advisable. A word of warning should be offered, however, that the pendulum in acute empyema cases is probably swinging too far in the opposite direction. If operation is postponed too long a rigid thickened pleura prevents the expansion of the lung, and we have a chronic empyema, one of the most difficult problems of surgery to deal with. In chronic empyema, Keller has shown that multiple operations, removing portions of ribs at a time to obliterate the dead space, reduced the shock and therefore the operative mortality.

5. *Esophagus.*—For obstruction due to carcinoma of the esophagus, preliminary gastrostomy must frequently be done for feeding, and then if the carcinoma is considered operable, a preliminary stage is frequently done, exposing the esophagus, and freeing it, then allowing adhesions to be formed by the pleura, or a later operation may be done to attempt to reconstruct the esophagus.

6. *Biliary tract.*—The liver, one of the most important organs in the abdominal cavity, is an unexplored field in many ways in our knowledge of surgery. We must learn some test of liver function, which will indicate to us the patient's ability to react from operative procedure. In both thyroid and kidneys we have chemical means of determining the patient's operability. Some similar procedure must be discovered for the liver. It is to be hoped that the phenoltetrachlorphthalein test will eventually fill this requirement. The icterus index is a reliable means of estimating the amount of jaundice that a patient is suffering from. The clotting and bleeding times are aids in preoperative preparation. By the administration of calcium, serum or drugs like fibrinogen, we may prepare the patient so that later oozing may be avoided. Next to the thyroid the multiple stage operation in biliary tract diseases is most important.

In abscess of the liver or in echinococcus cysts, a preliminary operation is necessary to wall off the peritoneal cavity and produce adhesions. A secondary operation can then be performed without risk of implantation of daughter cysts or secondary peritoneal infection. Likewise, in the approach of a subphrenic abscess, if the pleura be entered, it is necessary to produce adhesions before opening the abscess.

Acute cholecystitis is a disease which has previously created a higher mortality than most surgeons realize. Some years ago it was our tendency at the New York Hospital to operate in all acute cases of cholecystitis, performing a cholecystectomy as one would an appendectomy in acute appendicitis. To my surprise in going over our operative statistics I found that our mortality was in the region of eighteen per cent. We have found that by delaying operation until the temperature subsides, and then performing a cholecystostomy, the mortality can be greatly reduced. While a cholecystectomy may be necessary later, the primary procedure will reduce the mortality. In a recent case where Dr. Murray drained the gallbladder in a gangrenous cholecystitis, the entire gallbladder later sloughed out. This patient would probably have been lost had he attempted a cholecystectomy at the primary operation. In cases of severe jaundice in poor risks where there is obstruction of the common duct by stone, a primary cholecystostomy under local anesthesia, to relieve the jaundice is frequently a wise procedure. At a later period, when the patient's general condition is improved, the stone may be removed with relative impunity.

7. *Stomach.*—In carcinoma of the stomach with pyloric obstruction in debilitated patients, a preliminary jejunostomy for feeding purposes may be performed. Also in certain cases of carcinoma of the stomach with pyloric obstruction, a two stage operation may be performed, first, a gastroenterostomy and at a later stage a partial gastrectomy.

8. *Appendix.*—It has long been recognized by surgeons, that in appendicitis with abscess, it is advisable to drain the abscess without seeking for the appendix. If one attempts an appendectomy the protective adhesions may be broken up and a general peritonitis result. Many of these cases are cured as the appendix becomes gangrenous and sloughs out.

9. *Intestinal obstruction.*—Most hospital clinics show a mortality of fifty per cent. from intestinal obstruction. It is a well known fact that these patients stand any operative procedure or mauling badly. In the severe risks, a preliminary jejunos-

tomy will often tide them over the danger period; particularly is this true when the obstruction is relatively high. A second stage operation may then be performed to remove the cause of obstruction.

In cancer of the colon, Erdmann and others have urged a primary cecostomy under local anesthesia. When the carcinoma is in the rectum or lower sigmoid, a two stage operation may later be necessary following cecostomy.

10. *Genitourinary tract.*—The work of Geraghty with the phenolphthalein test is one of the greatest advancements of surgery. It may be safely stated that the present genitourinary diagnosis with cystoscopic phthalein and blood chemistry examinations is nearer an exact science than any other branch of surgery. By this means we are able to determine the portion of the genitourinary tract affected and the function of one or both kidneys. In hydronephrosis or pyonephrosis cures may occasionally be obtained by inserting a ureteral catheter and, thereby, producing drainage. Even if this is not entirely curative, a secondary operation is safer and frequently less radical.

In prostatic obstruction we have learned that urea nitrogen and creatinin retention in the blood indicate the likelihood of death if a prostatectomy is attempted. We have learned that a preliminary insertion of a permanent catheter, or if this is not feasible, a suprapubic cystostomy for drainage will reduce the nitrogen and creatinin retention of the blood to such a figure that a secondary operation for prostatectomy can be performed.

11. *Skin grafts.*—The late results of Thiersch skin grafts for filling defects wherein there has been scar tissue have been very unsatisfactory. It has been shown that contractions do occur beneath the Thiersch graft. This is due to the fact that no fat or connective tissue is transplanted with the thin layer of skin. For this reason pedicle grafts have become popular. The tubular graft with the two or three stage operation has proved very successful in this type of cases. With this graft fat can be transplanted and there is little likelihood of severe contractions. The socalled caterpillar graft is a tubular graft that may be taken from a distant part of the body and moved upward to the field of operation by alternately cutting one or the other pedicle and replacing it in a prepared field, always approaching nearer the defect.

12. *Osteomyelitis.*—In closing it is necessary to say a word about acute hematogenous osteomyelitis. Previously radical operations were advocated for osteomyelitis. Some men even advised the excision of the entire shaft at the primary operation. Unfortunate results occasionally occurred as in certain cases there was no regeneration of the shaft, and later difficult bone transplant operations had to be performed. If osteomyelitis can be recognized at an early stage the simplest type of surgical drainage can be established as a preliminary step, traumatizing the medullary canal as little as possible. When the acute suppuration has subsided, occasionally sequestrectomies have to be performed, but in the majority of cases early operation and adequate drainage will shorten the stay of the patient in the hospital and prevent deformities.

CONCLUSION

The object of surgery is to cure patients. If by performing multiple stage operations we can reduce the mortality, and make patients more efficient citizens, we are justified, no matter how long the hospital stay. It is a great temptation for all of us, when we see a pathological process, immediately to attempt its excision or cure. If the patient is unable to stand this prolonged procedure, mortality may result which might otherwise be avoided.

100 East Sixty-sixth Street.

The Use of Dental Stent in Skin Grafts of the Middle Ear and Mastoid Cavities

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The purpose of the radical mastoid operation is well known to us all but do we achieve the desired results in all cases, namely, the union of the external auditory canal, the middle ear, antrum and mastoid wound, into a common cavity, and the lining of this cavity with epidermis by the implantation of a flap from the external canal.

The necessity for skin grafting in the middle ear and mastoid cavity as a secondary procedure, following the radical mastoid operation, is apparent.

The plastic flap, used by a majority of otologists, works well in some cases. In my experience with over three hundred radical mastoid operations, epidermization of the cavity by the flap method is not always obtained. In such cases the use of the detached graft is indicated.

I am somewhat skeptical about the pedunculated graft of the flap operation, because pedunculated flaps must be thick. The attachment of the flap, held in place by sutures, throws tension on the pedicle. Passive congestion may ensue which results in death to all parts.

In dermic and epidermic detached grafts, the life of the graft depends upon its contact with the underlying surface. If thorough contact is obtained and the proper surgical technic carried out, the danger of the graft not taking is remote. Then the question arises of securing perfect approximation of these two surfaces. It is at this point that I wish to call attention to the use of the dental molding compound.

I have used this substance in two types of cases: First, in those cases where complete obliteration of the mastoid and middle ear cavities is desired, and second, in cases in which there is a persistent otor-

rhea, due to infection in the eustachian tube, and when it is desired to obliterate the middle ear orifice of this tube.

In the first instance, when it is desired to obliterate completely the mastoid and middle ear cavities, after having the wound prepared for the reception of a skin graft, a sheet of sterile dental molding compound is immersed in hot water for a period of thirty seconds. It is then taken out and allowed to cool, until it becomes flexible but not gummy. The compound is now packed into the mastoid cavity and middle ear and allowed to remain there until it hardens.

With this impression of the cavity the graft is then obtained, preferably from the thigh, taking enough epidermis to cover the cavities. It is then spread over the impression compound, raw surface outward, making sure that there is no turning in of the edges. This done, the molding compound, with the graft lying around it, is inserted into the mastoid wound and firm pressure applied, so that it will slip into place and approximation of surfaces be obtained.

The mastoid wound is allowed to remain open and a gauze pad is placed over it. Drainage is obtained through the external auditory canal by a gauze wick and a pressure bandage applied to the mastoid wound. The bandage is removed in four days, the pressure compound taken out and the wound closed under local anesthesia.

The second variety of cases is that in which the disease is confined to the eustachian tube and, after a thorough curettage, one desires to obliterate the orifice of the tube by skin graft. For this type the impression compound is introduced through the external canal into the middle ear cavity, and an impression obtained of the part of the cavity that is to be obliterated, namely, the eustachian orifice.

A skin graft is taken and placed over the impression compound, raw surface outwards. This is gently introduced through the external canal into the middle ear cavity. Firm pressure is made so that approximation of surfaces is obtained. The compound is held in place by cotton packs, together with a pressure bandage over the external canal. After four days the bandage is cut and the impression compound gently withdrawn from the external canal with a pair of forceps.

The success of a skin graft on any part of the body depends upon the approximation of the surfaces and this can be secured only through pressure. For this reason I use the aforesaid method.

Chronic Prostatitis With Special Reference to Its Focal Aspects*

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(*Concluded from page 24*)

Case III.—A man, aged thirty-three, came to the clinic September 18, 1924, complaining of rheumatism, weakness and loss of weight. Without apparent cause, in 1918, stiffness and swelling developed in the right knee. The course was intermittent until 1921, when following influenza a generalized arthritis developed, which continued until admission. The patient had had gonorrhea in 1914, and was apparently cured in six weeks. He was twenty pounds underweight, and tired easily. Repeated examinations of the lower urinary tract had not revealed disease. Urine was normal except for pus; Wassermann reaction negative. The hemoglobin was seventy-nine per cent., the erythrocytes numbered 4,490,000 and the leucocytes 7,900. Röntgenograms revealed periapical lesions of the teeth 2; thickened lungs with retracted pleura (right); and hypertrophic arthritis of the knees and elbows. The prostate was small, regular, symmetrical and firm. The right globus major was infiltrated.

After provocative treatment, prostatitis 2 was diagnosed on the fifth examination. The arthritis improved promptly; the patient gained five pounds following ten treatments given in fourteen days. Six weeks later he was continuing to improve, and felt better than at any time since 1918. Tonsils and infected teeth were not removed.

Case IV.—A man, aged twenty-four, came to the clinic July 10, 1924, complaining of swelling of the left foot, weakness, and loss of weight. In 1918 the left foot was slightly injured; it remained swollen, and was tender at intervals. In 1919 tonsillectomy was followed by marked swelling and pain for two weeks. In 1921, following removal of a third molar, which was abscessed, the symptoms all disappeared. In January, 1923, he began to lose weight and declined from 150 to 123 pounds in six months. In July, 1923, pain and stiffness invaded all the joints of the left foot, and the ankle and knee became large and swollen. Periodic swelling and tenderness in the left lower extremity induced varying degrees of difficulty in walking. He continued to lose weight. He complained of nocturia; denied gonorrheal infection.

The Wassermann reaction and examination of the urine were negative. The hemoglobin was seventy-eight per cent., the erythrocytes numbered 4,920,000, the leucocytes 7,600. The tonsils had been cleanly removed. Röntgenograms of the sinuses and teeth were negative. There was arthritis of the left knee and ankle. The prostate was small, smooth, regular, nonsensitive, and boggy 1. The first examination of the prostatic secretion revealed an occasional pus cell; the second examination five to ten pus cells, with occasional small clumps, the third examination 400 to 500 pus cells.[1] After

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[1]The counts of pus cells refer to the average high power field.

thirty-three treatments in sixty days the patient was greatly improved.

CASE V.—A man, aged thirty-six, came to the clinic October 8, 1924, complaining of pain in the left leg of one and one half years' duration. With out apparent cause eighteen months before, an aching pain began in the ischial region extending down the back of the thigh to the knee and occasionally to the foot. Pain was never entirely relieved. The patient denied having gonorrheal infection.

The Wassermann reaction and examination of the urine were negative. The hemoglobin was 78 per cent., the erythrocytes numbered 4,430,000 and the leucocytes 6,400. Röntgen ray examination of the teeth was negative. The tonsils were septic 2, with fluid pus in the right. The prostate was enlarged, firm, regular and symmetrical. The first and second examinations of the prostatic secretion following provocative treatments revealed an occasional pus cell; the third examination twenty to thirty pus cells, and the fourth thirty to thirty-five cells.

There was gradual improvement after thirty treatments in thirty-six days. The patient was entirely free from pain.

CASE VI.—A man, aged sixty-four, came to the clinic August 11, 1924, complaining of weakness and bladder trouble. He had lost weight and strength gradually for six years. The total loss of weight was thirty pounds. He had had lumbar and sacral backache for three years; dysuria and slow stream for one year which was without acute retention. There was no history of gonorrheal infection.

The Wassermann reaction was negative. The urine contained a trace of albumin, an occasional hyalin cast and pus cell. The hemoglobin was 40 per cent., the erythrocytes numbered 1,970,000 and leucocytes 12,000. The differential count was normal. The erythrocytes revealed slight anisocytosis and poikilocytosis. Röntgen ray examination revealed a periapical lesion and an old lesion in the right upper lobe of the lung. The tonsils were atrophic. The prostate was enlarged 2, smooth, regular, and tender. The prostatic secretion following provocative treatment showed 400 to 500 pus cells on the second examination.

After fifteen treatments in thirty days the patient had gained ten pounds and his general health was excellent. Dysuria and nocturia had improved greatly.

In August, 1924, the hemoglobin was 34 per cent., the erythrocytes numbered 2,130,000 and leucocytes 12,000. On September 28 the hemoglobin was 74 per cent. and the erythrocytes numbered 4,010,000.

CASE VII.—A man, aged thirty-eight, came to the clinic June 30, 1924, complaining of pain in the small of the back. In February, 1923, following an attack of tonsillitis severe lumbago had developed, necessitating a stay in bed of two weeks. When he got up pain recurred in the right hip and back, and he was on crutches for about four months. Several teeth had been removed and tonsillectomy performed in November, 1923. His condition remained unchanged until January, 1924. Since then he had gradually become worse; pain had extended into the right hip and back of the thigh. There had been a gonorrheal infection fourteen years before and an uncomplicated cure effected. He had slight nocturia.

The Wassermann reaction was negative, and examination of the urine and blood was normal. Röntgen ray examination of the teeth, spine and pelvis was negative. The tonsils had been cleanly removed. The prostate was enlarged 2, symmetric, slightly irregular in the right lobe, but not tender.

Examination of the prostatic secretion following provocative treatment revealed prostatitis 3. Seventeen treatments were given and the patient was greatly relieved.

CASE VIII.—A man, aged fifty-one, came to the clinic August 14, 1924, complaining of urticaria which had occurred at frequent intervals for nine years. The first attack followed a meal of sea food, starting with twitching sensations and dizziness. Attacks lasted for from eight hours to two or three days. Attacks finally became cyclic in character, occurring at weekly intervals. The patient had had gonorrheal infection in 1914; this had cleared up promptly and without complications.

The Wassermann reaction was negative. The urine contained albumin 2, casts and blood cells. The hemoglobin was 74 per cent., the erythrocytes numbered 4,370,000 and leucocytes 7,900. A fractional test meal revealed total acidity 80 and free hydrochloric acid 60. Röntgen ray examination of the teeth revealed a periapical lesion. Proctoscopic examination revealed internal hemorrhoids; the external genitalia were negative.

Examination of prostatic secretion revealed pus 4. The first examination was followed by a chill, rising temperature, and a typical urticarial rash. Slight reaction followed the second treatment. From August to September, 1924, seventeen treatments were given. There were no more attacks of urticaria after the second treatment. The patient's general health improved greatly and was excellent three months after dismissal.

CASE IX.—A man, aged thirty-five, came to the clinic June 27, 1924, complaining of trouble of the stomach and skin. He had had hematemesis, pyrosis, and pain one hour after meals for one year. He had no trouble on a vegetable diet. He had had a gonorrheal infection in 1906 and bilateral buboes and was treated with urethral injections. He had a second infection in 1921, followed in from two to three weeks by erythematous lesions on the back of the hands. Recently the feet, knees, and back had been affected. Diagnosis of erythema multiforme had been made. The lesions became vesicular after a few days of erythema, and following a gonococcal vaccine they disappeared to recur within a few weeks.

The Wassermann reaction and examination of the urine and blood were negative. The fractional test meal showed total acidity 40 and free hydrochloric acid 22. Röntgen ray examination of the stomach was negative. The tonsils had been cleanly removed. The provocative test for syphilis was negative. The prostate was small, smooth, regular and symmetrical.

Examination of the prostatic secretions July 8th revealed an occasional pus cell; July 12th, from twelve to fifteen pus cells.

Lesions receded rapidly after the first massage, Kollman dilatation and treatment with silver salt. They had entirely disappeared at the end of two weeks of treatment. The patient felt better than for years.

Case X.—A man, aged forty-four, came to the clinic July 12, 1924, complaining of fever, pain in the back and weakness of five weeks' duration. He had not felt well for several months. The pain radiated to the pubic region, was at times sharp, but never severe. It was associated with dysuria; there were aching sensations throughout the body, and headaches. Ten pounds in weight had been lost in the five weeks. Fever had been constant. He denied gonorrheal infection.

The Wassermann reaction was negative and examination of the urine was normal except for an occasional blood cell. The hemoglobin was 74 per cent.; the leucocytes numbered 7,200. The Widal test and blood culture were negative. The phenolsulphonephthalein return was 80 per cent. The temperature on admission was 101.8°, on the second day 100.6°, and on the third day 104°. Röntgen ray examination of the teeth, chest, kidneys, ureter and bladder was negative. The prostate was enlarged 2, symmetric, soft and nonsensitive. The vesicles were negative.

The first examination of prostatic secretion revealed 400 to 500 pus cells. Following the first expression of the secretion the temperature dropped to normal and remained so. Symptoms were greatly improved after a few treatments. The patient went home for further treatment.

Case XI.—A man, aged thirty, came to the clinic June 19, 1923, complaining of rheumatism in all the joints, chiefly the hands and feet. Seven years before, he had had gonorrhea and in a few days pain and swelling of the hands and feet. Following irrigation with permanganate of potash all general and local symptoms cleared up. The patient remained well for four years; the symptoms then recurred and during the last few months progressed rapidly. During the last three years the patient had been confined to bed frequently and had been unable to walk for four weeks. Muscular atrophy and general emaciation were marked.

The Wassermann reaction was negative. The urine contained albumin 1 and pus cells 3. The hemoglobin was 60 per cent., erythrocytes numbered 3,930,000 and the leucocytes 9,000. The tonsils were small and probably negative. Röntgen ray examination of the teeth was negative. The ray revealed destructive arthritis of the carpal bones of the right hand, ankle and foot, and calcaneal spurs. The prostate was enlarged, firm, regular and symmetric. The vesicles were slightly sensitive, but not infiltrated.

From June 25th to July 12th, eight treatments were given; from July 12th to August 25th, seventeen treatments; from August 25th to September 10th, seven treatments; from September 10th to January 1, 1924, fifty treatments; and from January, 1924, to November, fifty treatments. During this time two courses of aolan, a total of forty muscular injections, were given. August 3, 1923, seventy-five to 100 pus cells were found in the prostatic secretion; June 28, 1924, fifty pus cells; August 12th, 150 to 200 pus cells; and October 29th, twelve to fifteen pus cells. Findings have been negative since October, 1924.

July 12, 1923, the patient was in a wheel chair, feeling much better, gaining in weight and enjoying a good appetite. The rheumatism had greatly improved (60 per cent.). August 25th the patient was on crutches, was stronger and had much less pain. September 10th he was walking with a cane and by January, 1924, he was erect without a cane and practically free from pain. In April, 1924, he felt well and had only an occasional slight pain in the ankles. He was working steadily in November, 1924.

Case XII.—A man, aged forty-six, came to the clinic June 9, 1923, because of rheumatism of the hips and knees which began twenty-five years before, following gonorrheal infection. A second infection had occurred in 1911 with recurrence of rheumatic symptoms which gradually increased. Involvement of the cervical spine was noticed recently. During the last year the patient had had pain in the right eye, and blurring. He had slight nocturia.

The Wassermann reaction was negative. The hemoglobin was 76 per cent., the erythrocytes numbered 4,180,000, and leucocytes 7,100. The tonsils were slightly enlarged. Röntgen ray examination of the teeth revealed one periapical lesion; the spine was negative. There was hypertrophic arthritis of the left knee. The prostate was enlarged 1.

June 13, 1923, examination of the prostatic secretion did not reveal pus cells. June 18th, from eight to ten pus cells were found. Following ten treatments the vision became clear. The arthritis responded only slightly to treatment.

Case XIII.—A man, aged thirty-six, came to the clinic October 19, 1923, complaining of failing vision. Six years before, he had noticed a slight speck in the right eye, and later small floating opacities in both eyes. The condition had grown progressively worse. Gonorrheal infection was denied.

The Wassermann reaction was negative. The urine was normal except for pus 1 (seven cells). Hemoglobin was 75 per cent.; leucocytes numbered 11,700. Röntgen ray examinations of the teeth and chest were negative. The tonsils had been cleanly removed. The external genitalia, prostate, urethra and vesicles were normal.

October 14, 1923, prostatic secretion contained an occasional pus cell; on October 26th, twenty to forty pus cells, with small clusters; on November 9th, thirty pus cells; November 24th, five to eight; December 4th, 150, and December 14th, from eight to fifteen.

The general response to treatment was gradual, with gradual improvement in vision. Twenty treatments were given.

Case XIV.—A man, aged fifty-two, came to the clinic September 19, 1924, complaining of pain in the feet. He had had gonorrheal infection fourteen years before. Two and one half years before admission pain had developed in the bottom of the right foot which was worse on bearing weight. One year later a similar condition appeared in the left foot. The pain was increased with prolonged walking and was relieved by rest and elevation. More recently

numbness had developed and a dark, bluish discoloration appeared. The calves of the legs became painful. The patient became weak generally and lost weight.

The Wassermann reactions on the blood and spinal fluid were negative. The urine was normal except for an occasional pus cell. The hemoglobin was 82 per cent.; the erythrocytes numbered 4,840,000 and the leucocytes 7,200. Röntgen ray examinations of the teeth and left foot were negative. The tonsils had been removed, leaving tags on both sides. The prostate was slightly enlarged, indurated and irregular. The vesicles were distended but not infiltrated.

Examination of the prostatic secretion September 24th revealed seven pus cells and an occasional small clump. September 25th, an occasional pus cell was found; September 26th, 150 to 200 pus cells; November 23rd, twelve to fifteen with an occasional small clump.

October 28th the pain in the feet had greatly improved. A total of eleven treatments was given. The end results are indeterminate.

Case XV.—A man, aged thirty-seven, came to the clinic November 24, 1924, complaining of generalized pain, worse in the fingers and feet. He had had gonorrheal infection eight years before. Slight pains had occurred throughout various parts of the body for several years; these became marked about a year before admission, and were associated with numbness in the hands and feet. A cane was used because of weakness.

The Wassermann reaction on the blood and spinal fluid was negative. Urine was normal except for a trace of sugar. The blood was normal. Röntgen ray examinations of the teeth and stomach were negative. The tonsils were enlarged, soft, buried and contained a few plugs. The prostate was enlarged 2, firm, irregular and symmetric.

From 150 to 200 pus cells were found in the prostatic secretion. Indefinite improvement followed a course of ten treatments.

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A Case of Bilateral Gynecomastia*

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This case is reported because it is unusual to find the condition occurring bilaterally with both mammæ lactating, in an apparently healthy young male.

Case.—A. S., male seventeen years of age, an Italian laborer, entered the medical clinic, Charity Hospital, New Orleans, La., March 8, 1925, complaining of enlarged and discharging breasts. He gave a history that the enlargement of the breasts was first noticed at the age of fourteen, and a year later he noticed that they were much larger than those of other boys of his age. They were at times slightly painful to pressure. Some time after this he noticed that on pressure of the nipples a whitish fluid would be expressed. Both breasts had been slightly tender from time to time since, and the secretion could be easily expressed from the nipples.

The family history was negative and there was no history of any member of the family having enlarged breasts.

Physical examination revealed a fairly well developed and well nourished youth of seventeen years, weighing 121 pounds, and 68 inches in height. The voice appeared normal for a youth of this age. The face was void of a masculine growth of hair except for a slight growth of extremely fine hair on the upper lip. There was no broadening of the hips, widening of the pubic angle or tapering of the hands. There was slight feminine distribution of the pubic hair.

Both mammæ were similar in appearance to that of a girl at the age of puberty. Each mamma measured five cm. in diameter, three cm. in height and had an areola of two cm. in diameter. There was a well formed nipple, which was distinctly erectile, on each mamma. Head, chest, abdomen and extremities were normal. Genitals were well developed; no

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abnormalities detected. Wassermann negative; blood picture normal; urine negative. The breast secretion showed a white colored fluid of slightly less consistency than milk, containing a few epithelial cells, a few leucocytes, and a large number of fat globules.

Gynecomastia is a condition of hypertrophy of the male breast which causes it to assume more or less the size, appearance and in some ways the functions of the female breast. This condition may be either unilateral or bilateral and presents two factors for consideration—enlargement and secretion. The major portion of the literature on the subject considers only the enlargement, while we do find cases reported infrequently which tell of the secretory or lactating ability of the gynecomastia. It is of marked interest to note the infrequence with which the secretory activities occur. The condition presents further points of interest in that the cases which occur early in life or before puberty seem to show a tendency to a lack of development of the external genitalia or of the sexual organs; while those occurring about the time of puberty on the whole show no abnormalities of the sexual organs; and yet those occurring in later life are associated to a large extent with sexual defects, which in the majority of cases are due to the results of injury or disease. From a sex viewpoint, two types may be considered; in the one the condition is associated with a normal sexual function, while in the other testicular defects are always present.

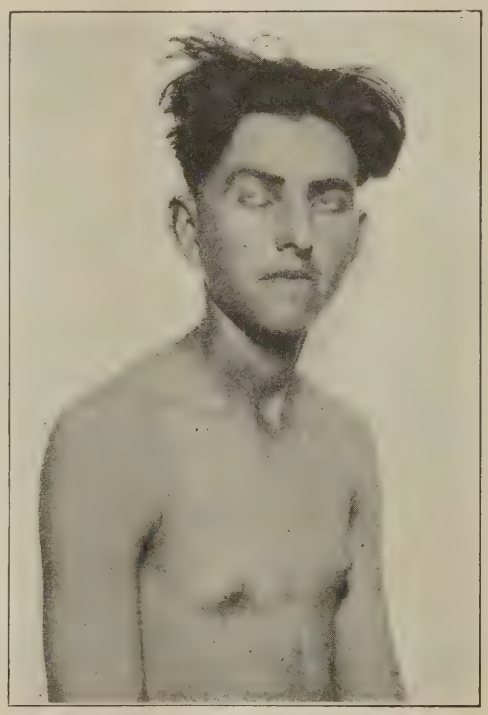

FIG. 1.—Female characteristics of the breast in a young male.

In a study of the reported cases and the writings on the subject of gynecomastia, it is noticed that the condition was much more common in earlier times than at present, and was of much greater frequence among the lower races of human beings than it was among those of higher development, and a fairly high percentage is reported among the criminal classes and inmates of institutions of reform.

Certain theories of gynecomastia are given, as: Atavistic phenomenon, supported by the facts that lower races have larger mammary glands than those of higher races and that the condition seems to be normal among the Abyssinian and Galla youths and is also quite common among the tribes of the Sudanese; sign of degeneration, which we may consider a modification of the former theory; sign of sexual abnormality, since it occurs in association with imperfect development of the sexual organs, also in pseudohermaphroditism, and may result from diseases or removal of the testes; local traumatic injury, where a few cases have developed following trauma of the breast.

From the viewpoint of gynecomastia being a hereditary condition, there are several reported cases where there are father and son who are gynecomasts, and others showing several gynecomasts in the same family. Yet, since it is suggested that the condition is the result of disturbances of internal secretion, it may be possible that certain families are peculiarly susceptible to certain endocrine dystrophies, which may account for the occasional familial occurrence of the condition. There are a number of cases to which no cause for the condition can be assigned, that is, cases where there is no known inherited tendency, no sign of degeneration, no sexual disturbance and no history of local injury to the part.

It may be said that the condition is frequently unilateral, though more often bilateral. The age incidence is undetermined, though the greater number of cases are reported from the age of puberty to adolescence. The general appearance of the breasts is usually described as being like the virginal mammæ of a girl of fifteen to sixteen years of age. The enlarged breast is infrequently attended by pains which vary from a dull aching to severe lancinating or burning sensations. The tendency of the enlargement is to persist and secretory activities sometimes do occur.

The size, general appearance, female type and tactile sensation of the breasts are usually sufficient evidence to permit the diagnosis. The prognosis is good; the patient can expect no change in the enlarged breast, and there is little or no danger of future complications. Only a few cases require treatment. The condition is an anatomico-physiological anomaly rather than a disease, and the only treatment to be recommended is amputation or plastic resection.

It is interesting to note that in 162 cases of gynecomastia tabulated by Deaver and McFarland, there were sixteen subjects showing secretory activities, and twenty having normal sexual organs, and of the twenty with normal sexual organs the ages were from twelve to twenty-three years.

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Diathermy in Pelvic Infections*

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Diathermy can be defined as the penetration of tissue with an electrical current of high frequency that results in heat production. This thermic result develops within the tissues and at any depth when the D'Arsonval current traverses between two electrodes.

The amount of heat generated depends, first, upon the number of milliamperes utilized; second, the size of the electrodes; third, the resistance of the tissues; fourth, the length of time the current is applied.

By the use of this electric agent any degree of heat can be manufactured in the human tissues from 37.5° C. to 60° C. When heat is generated from 37.5° C. to 52° C. for therapeutic purposes it is called medical diathermy; when a greater degree of heat is produced tissue destruction begins and at 60° C. is completed. The latter procedure is named surgical diathermy, or electrocoagulation.

Medical diathermy can be applied to any tissue and at any depth, provided the part treated lies between two electrodes. The current of electricity travels the shortest distance between the two electrodes, thus generating heat. When the electrodes are of the same size the heat produced in the tissues is greatest at a point midway between them. When electrodes of different sizes are used the greatest point of heat generated is nearer the small one. These principles are readily utilized in applying the maximum point of heat to different pathological sites by varying the size of the electrodes.

In surgical diathermy, or electrocoagulation, when destruction of tissue is desirable, one large surface electrode and a small active electrode are always used. This gives a maximum amount of heat at the point of contact of the smaller electrode, which, with sufficient amount of current, produces a temperature up to 60° C. with consequent destruction.

The action of heat upon diseased structures is well known. An active hyperemia is brought about, the intensity of which depends upon the degree of heat and the length of time administered. As a part of the hyperemic process a quickening of the circulation occurs and accompanying this there is a dilatation of the capillaries that allows the fluid elements of the blood to transude into the tissue spaces. When this action takes place in the presence of inflammation there is a reduction of the stasis in the engorged bloodvessels and relief of pressure upon the nerve filaments, thereby decreasing pain. There is also a greater and quicker absorption of the exudate, for by the increased flow of blood to the pathological site more units of Nature's defense against invasion are mobilized.

The bactericidal action of heat is an important feature to be considered in diathermic applications. Heat destroys different bacteria at different degrees of temperature. Some are killed at lower degrees than others. The gonococcus is destroyed by an exposure to 41° to 43° C. for ten minutes. It is for this reason that the application of diathermy has met with the success it has in pelvic infections.

TABLE 1

DEGREE OF TEMPERATURE DESTROYING DIFFERENT PYOGENIC BACTERIA

Bacteria	*Temperature*
Gonococcus	41°-42° C.
Streptococcus	54°-60°
Staphylococcus	56°-58°
Pneumococcus	52°
Tubercle bacilli	60°
Colon bacillus	60°

In the gynecological service of Harlem Hospital we consider eighty-eight per cent. of the patients suffering from adnexal inflammation to have the gonococcus as the inciting factor of their disability. During the last three months fifty-two patients having pelvic infections were treated with diathermy. Thirty-six patients had definite masses in one or both adnexa. All were admitted seeking relief from abdominopelvic pain and everyone had an endocervicitis; some had a urethritis.

TABLE II

PATHOLOGICAL CONDITIONS TREATED WITH DIATHERMY
TOTAL NUMBER OF CASES—FIFTY-TWO

Pathological Condition.	*Number*
Adnexal disease, with masses	36
Adnexal disease, without masses	14
Puerperal infection	2
Endocervicitis	48
Urethritis	26
Skene's glands	6

ADNEXAL DISEASE WITH MASSES

Eighty-eight diathermy treatments were given to this group. The lowest number of treatments given was one and the highest number was nine, to a single individual. The masses in twelve patients disappeared; in ten patients the masses were perceptibly reduced in size; in fourteen patients there was no reduction of the masses. The pain for which they sought relief was practically relieved in all cases by the first application. Two patients had recurrence of pain but were relieved by subsequent treatments. No other treatment was instituted, nor were there any analgesics administered for the control of pain. The best results in this group were obtained among those patients who had the highest number of treatments for longer periods of time (twenty-five to thirty minutes), and when the vaginal temperature was maintained at 43° to 47° C. From this group six patients were operated upon who continued to have pelvic masses and discomfort.

TABLE III

ADNEXAL DISEASES WITH MASSES
TOTAL THIRTY-SIX CASES—DIATHERMY TREATMENTS, EIGHTY-EIGHT

Application	*Number of Treatments*	*MA.*	*Minutes*
Sacroabdominal	33	1500-4000	15-30
Abdominovaginal	55	1500-2500	15-25

Raising of vaginal temperature 43°-45° C.

*From the Gynecological Division of Harlem Hospital.

RESULTS

	Number of Patients	Per Cent.
Relief of pain	36	100
Recurrence of pain	2	...
Disappearance of masses	12	61
Reduction of masses	10	

PATIENTS RECEIVING FIVE OR MORE TREATMENTS

TOTAL TEN CASES

	Number of Patients	Per Cent.
Masses and tenderness entirely disappeared	8	80
Masses and tenderness were markedly reduced	2	20

ADNEXAL DISEASE WITHOUT MASSES

A group of fourteen patients had no masses but the adnexa were thickened and tender and they had the usual endocervicitis: some had urethritis and Skene's gland involvment, which stamped them as gonorrheal in origin. Of this group twelve patients were relieved of their pain: one patient did not get relief. In all, only fifteen treatments were administered averaging one to each patient.

TABLE IV

Adnexal Diseases Without Masses

TOTAL FOURTEEN CASES

DIATHERMY TREATMENTS—FIFTEEN

Application	Number of Treatments	MA.
Sacroabdominal	9	1500-4000
Abdominovaginal	6	1500-2500

Raising Vaginal Temperature 43°-45° C.

RESULTS

	Number P.
Relief of pain occurred in	13
No relief of pain occurred in	1

ENDOCERVICITIS GROUP

Forty-eight patients had endocervicitis with an accompanying thick, heavy, tenacious, mucopurulent secretion. Thirty-nine endocervical treatments were made with the thermophore; however, there were fifty-five applications made with the vaginal electrode for the accompanying adnexal infection that no doubt produced a rise of temperature in the cervical tissues. In this group twenty-four were cured or showed a marked diminution of the amount and the character of the discharge which had changed to a thinner and less purulent material. Twenty-four patients showed no improvement.

TABLE V

Endocervicitis Group

OCCURRING WITH ADNEXAL DISEASE OF GONORRHEAL ORIGIN

TOTAL FORTY-EIGHT CASES

Aplication	Diathermy Treatments	MA.	Minutes
Abdominocervical	39	500-800	15-30

Temperature of cervical canal maintained 43°-47° C.

RESULTS I

	Number
Patients receiving two or more treatments	9
Patients cured or markedly improved	6

RESULTS II

	Number
Patients receiving one treatment each	18
Patients cured	2
Patients improved	10
Patients unimproved	6

URETHRITIS GROUP

There were twenty-six patients who had urethritis; of this group only thirteen were treated with twenty-one applications of diathermy by the Corbus thermophore. They were given 600-800 milliamperes until the thermometer registered 43°-47° for twenty to thirty minutes. Six patients were cured of the discharge, and six were improved; one patient showed no improvement.

TABLE VI

Urethritis Group

OCCURRING WITH ADNEXAL DISEASES OF GONORRHEAL ORIGIN

TOTAL TWENTY-SIX CASES

Application	Treatments Diathermy	MA.	Minutes
Urethral	21	600-800	15-30

Elevating urethral temperature 43°-47° C.

RESULTS

	Number
Patients treated	13
Cured	6
Improved	6
Not improved	6

There were seven patients, however, who had two or more treatments; five of these were cured, and one was much improved. This latter group, although very small in numbers, however shows the efficacy of more treatments than the average patient received suffering from this condition.

TABLE VII

PATIENTS OF THIS GROUP HAVING TWO TO THREE TREATMENTS

TOTAL SEVEN CASES

RESULTS

	Number
Cured	5
Much improved	1
Not improved	1

In spite of the infrequency and few number of urethral treatments received forty-six per cent. were cured and forty per cent. improved.

Of the patients who had infections of Skene's glands, diathermy application was made to the urethra with the thermophore, treating them as the urethritis group cited. There were six such cases, of which five were cured; one patient persisted with a mucous discharge from the right gland and it was necessary to apply coagulation in order to effect a cure.

Of the six patients operated upon who had persistent masses following diathermy treatments the pathological findings were pyosalpinx and tubo-ovarian abscesses. All six patients had the diathermy treatments administered by the abdominovaginal and abdominosacral application of electrodes. Three patients had three treatments each; one had four treatments; one had five treatments, and one had seven treatments. The amount of milliamperes used in the abdominovaginal application was 1500-3000; in the abdominosacral application 2500-4000 milliamperes was employed. In every instance sufficient current was utilized so as to elevate the temperature in the vagina to 43° to 47° C.

The following gross appearance at operation may be of interest: First, the adhesions instead of the usual hard fibrous bands between intestines and pelvic structures were thinner, more vascular, and, in consequence, more easily separated. Second, the inflammatory masses, themselves, seemed softer and more succulent, rendering their delivery into the abdominal wound more readily accomplished. Third, the contents of the masses consisted of a thin, watery exudate instead of the purulent material usually encountered. Cultures of the fluid, as well as tissue cultures, were done in three cases showing no growth.

One also was impressed by the smooth postoperative course of these cases—the comparative freedom from pain, distention and vomiting of the patients, and wounds free from infection.

Two postpartum adnexal infections were each given one application of diathermy with disastrous results in one case and the institution of an acute pelvic peritonitis in the other case, that resulted in a pelvic abscess, requiring evacuation of the pus through the vagina. This type of infection is not suited for diathermy treatment as the degree of heat necessary to be generated to destroy the activity of the streptococcus, staphylococcus or Bacillus coli cannot be utilized without destroying other tissue. A lower degree of heat probably serves in revivifying bacteria that are dormant, thus bringing about a more suitable cultural environment, thereby inciting a fresh infection.

CONCLUSIONS

From observations based upon the patients treated for pelvic infections at Harlem Hospital with diathermy the following conclusions have been reached:

1. In pelvic infections of gonorrheal origin it is the treatment of choice.
2. It relieves abdominopelvic pain almost instantly.
3. It causes the disappearance or reduction of the pelvic masses in sixty-one per cent. of instances.
4. It cures or diminishes the endocervicitis in ninety per cent. of cases, thus preventing a reinfection of the adnexa from the cervical canal.
5. As a preliminary treatment to operation among patients whose pelvic masses persist, it is the best agent we possess, for if sufficient treatments are administered the pus contents of the tubes are rendered sterile and innocuous. In consequence a more rapid and successful convalescence ensues.
6. In urethritis and Skene's gland infections it is the treatment of choice.
7. The employment of diathermy in postpartum or postabortion infections cannot be recommended, as the degree of heat generated in the pelvis is insufficient to devitalize the type of bacteria producing the infection.

580 Park Avenue.

Digestive Symptoms Caused by Disease of the Abdominal Vessels

*With Special Reference to Arteriosclerosis**

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(*Concluded from page 10*)

The symptoms may sometimes be so severe as to simulate a ruptured gastric ulcer, hemorrhagic pancreatitis or ruptured gallbladder. The differential diagnosis is difficult and often impossible. It may be said of angina abdominalis that it is brought on as in angina pectoris by exertion or after a heavy meal. The symptoms are usually of a transient nature. In some cases the repeated attacks and the fact that the patient is relieved by vasodilators, such as diuretin or nitroglycerin, will help in establishing the proper diagnosis.

In a great number of cases the symptoms are due to spasm of the intestinal vessels either in the angioneurotic or angiosclerotic stage. This symptom complex was first correctly interpreted by Schnitzler who called it intermittent anemic disperistalsis of the intestines. Soon after E. Neusser described some cases. Ortner, who gave the best description of the symptom complex, termed the disease dyspragia intermittent angiosclerotica intestinalis. In this country Gilbride, W. W. Hamburger, G. A. Friedman, and recently Jacob Meyer made valuable contributions to the subject.

The symptoms are at first of a transient nature and consist of fullness and a feeling of tension in the abdomen and progressive constipation with a sensation of having the desire to go to stool but without success. Loss of appetite, belching, nausea and anxiety may also be present.

In the vast majority of cases the symptom complex is as follows: The abdominal pain is the most striking symptom. It occurs periodically and is diffuse over the entire abdomen and may be of a lancinating penetrating character, reaching its maximum intensity within one half to one minute and lasting from ten to fifteen minutes and sometimes for several hours. In rare cases the pain lasts several days to a week. The severity of the symptoms varies during different attacks. The pains may sometimes be so severe as to cause the sensation of impending death or give rise to fainting. The fainting spells are more outspoken if the pain is confined to the upper abdomen. Repeated attacks may occur during the day. In other cases the patient may be free from attacks for weeks or months. The patient usually attributes the attacks to exertion, psychical trauma or heavy meals, especially such that cause abdominal distention. In some cases the pain may wake the patient from sleep. Some patients cannot lie flat on their backs and are compelled to sleep in a semirecumbent position. In most cases the abdomen is distended and meteorism is marked. The diaphragm is pushed up to such an extent that it causes dyspnea, palpitation, and increased pulse rate.

Meteorism may be as marked as in peritonitis, but unlike the latter, intestinal sounds can be detected on auscultation. When borborygmi sets in, the patient usually is relieved. Vomiting occurs but it is not the rule. The meteorism usually affects the cecum and transverse colon. In the case reported by Jacob Meyer the distention of the transverse colon was so marked as to fill the entire abdomen. In some of the cases it is associated with thromboangiitis

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obliterans. Jacob Meyer speaks of the condition as thromboangiitis obliterans of the abdominal vessels. His case and the one reported by G. A. Friedman were associated with thromboangiitis obliterans of the lower extremities. The author saw two cases associated with thromboangiitis obliterans.

The diagnosis of dyspragia intestinalis is very difficult because a number of other intraabdominal conditions may give rise to similar symptoms as, for instance, cholecystitis, appendicitis, nephrolithiasis, intestinal obstruction, hemorrhagic pancreatitis, twisted ovarian pedicle, lead colic, tabetic crisis, or nicotine abuse. In the presence of thromboangiitis obliterans of the lower extremities or general arteriosclerosis, the diagnosis may be possible. The diagnosis is also facilitated if there is considerable freedom of symptoms between one attack and the other. The prognosis in these cases depends on whether the symptoms are angioneurotic or angiosclerotic in nature. If the symptoms are due to an angioneurosis, the patient may, after repeated attacks, become free from symptoms and remain so for the rest of his life. In the angiosclerotic stage, there is a tendency for the symptoms to recur and become more marked.

In discussing the abdominal symptoms due to disease of the abdominal vessels, those caused by thrombosis of the mesenteric vessels must be mentioned.

The distribution of the mesenteric vessels to the abdominal organ is as follows: the superior mesenteric artery supplies through the inferior pancreatic duodenal artery, the duodenum; through the jejunal and iliac arteries, the jejunum and ileum; through the ileocolic artery, the lower ileum and cecum; through the right colic artery, the ascending colon; and through the middle colic artery, the right half of the transverse colon. The inferior mesenteric artery supplies the distal half of the transverse colon. The left colic artery supplies the sigmoid through the sigmoid artery. The upper rectum is supplied by the hemorrhoidal vessels. The superior mesenteric vein corresponds in its distribution to the mesenteric artery. The inferior mesenteric vein and the superior hemorrhoidal veins form a rich anastomosing network in the hemorrhoidal plexus with the hypogastric veins. Both veins form, with the veins supplying the stomach and the spleen, the main branches of the portal vein.

Although the mesenteric arteries are not terminal vessels the collateral circulation, under pathological conditions, is insufficient for the proper functioning of the intestines. This is the reason why Litten terms the superior mesenteric artery "functional terminal artery."

Obliteration of the mesenteric vessels is a rare disease. Embolism of the mesenteric artery is more frequent than thrombosis. The superior mesenteric artery is more frequently affected than the inferior. Emboli of the mesenteric arteries are usually carried from the heart or aorta, more rarely from the pulmonary artery. It is encountered in the course of infectious polyarticular disease, septic endocarditis, chronic valvular disease, chronic myocarditis, aortitis, aneurysm of the aorta, and ulcerated sclerosis of the superior mesenteric artery proper.

Thrombosis of the mesenteric artery usually results from arteriosclerosis, especially if of luetic nature. The occlusion may be caused by endarteritis obliterans or by wall thrombi. The sclerotic thrombi of the mesenteric arteries lead to infarction of the intestines and to gangrene. Thrombosis of the mesenteric veins is mostly the consequence of inflammatory changes in the abdominal organs, especially the intestines. It occurs frequently in the course of septic thrombosis during appendicitis and after infectious enteritis. Septic and aseptic venous mesenteric thrombi may be the result of intestinal strangulation or invagination or may follow gastroenterostomy or splenectomy. The condition is also at times encountered in syphilis, typhoid, general carcinomatosis, dysenteric ulceration of the intestines, suppurative parotitis, carbuncles of the neck, operations on the thyroid and after delivery.

Secondary mesenteric vein thrombosis may follow primary thrombosis of the portal vein.

Thrombosis of the mesenteric arteries and less frequently of the mesenteric veins may occur in the course of infectious polyarterial thrombosis. Eichhorst considered the condition to be due to the infection involving first the adventitia and from there spreading to the media and intima. In the two cases described by Eichhorst the thrombi were found in multiple vessels (femoral, iliac, renal and mesenteric) without any lesion in the valves of the heart. One of his cases occurred in the course of scarlet fever. He, therefore, attributed it to an infection of the bloodvessels proper. A similar case was recently described by Hampeln.

SYMPTOMS

Litten's experimental work, as well as his clinical observations, show that shortly after the mesenteric vessel is obliterated there is an increased excitability of the motor nerves and the muscles of the intestines leading to increased intestinal peristalsis which is responsible for the diarrhea. At times the increased excitability of the intestines causes spastic contraction of the colon with obstinate constipation. As a rule, however, there is diarrhea associated with severe pains and vomiting.

The onset is usually sudden whether the thrombosis affects the artery or the vein. The patient complains of severe colicky pains and nausea. Violent peristaltic contractions of the affected anemic part of the bowel is usually present. Singultus and vomiting are early symptoms. Vomiting is rarely fecal. Hematemesis is also very rare, but if present it is due to the blood regurgitated from the intestines into the stomach. Bloody stool is more frequent and according to most statistics it is encountered in fifty per cent. of the cases. Another very striking symptom is collapse. The pulse is rapid, the temperature subnormal, the face pinched, and the extremities are cold.

The first symptoms resemble greatly those of intestinal obstruction due to strangulation. However, in contradistinction to strangulation, thin, bloody bright red or dark red stool is present in mesenteric thrombosis. The loss of blood may be considerable and in part responsible for the fatal termination. In a small number of cases death occurs during the stage of shock before the symptoms of intestinal occlusion set in. The initial symptoms of collapse last from about twelve to twenty-four hours after

which the signs of intestinal occlusion make their appearance and they remain throughout the course of the disease. Very often the pains are so severe that the patient moans continuously to the end of his life. At times visible peristalsis may be noticed over that part of the colon which is obstructed. Death usually results within the first week. Very seldom recovery takes place. It may be stated that the longer the disease lasts and the milder the symptoms the better are the chances for the reestablishment of the collateral blood supply.

Thrombosis of the abdominal aorta or vena cava inferior is usually the consequence of disease of the bloodvessels proper. Thrombosis of the abdominal aorta is due to arteriosclerosis; thrombosis of the vena cava inferior is often due to syphilis.

Thrombosis of the portal vein plays an important rôle clinically. It may occur in the course of cirrhosis or syphilis of the liver or be due to sclerotic changes in the wall of the portal vein. The thrombosis may run a chronic course. It may also be due to thrombosis of the mesenteric veins. At times pressure from without by cancer of the neighboring organ, enlarged lymphatic glands, gallstones and more rarely trauma may cause thrombosis of the portal vein.

Acute occlusion of the portal vein causes profuse gastrointestinal hemorrhages with resulting death. If thrombosis develops gradually, ascites is present, spleen and liver become enlarged and there is frequently icterus. In case of primary thrombosis of the portal vein without any other disease, collateral circulation either through the vena cava superior and inferior or through the hemorrhoidal vessels may take place causing a disappearance of the symptoms.

Another vascular symptom complex of the gastrointestinal tract not caused by inherent disease of the gastrointestinal vessels must be mentioned here, namely, the socalled angioneurotic edema described by Quincke and soon after by Osler. That angioneurotic edema of the skin is very frequently associated with gastrointestinal symptoms is a well known fact. According to Collins, the skin manifestations are accompanied by acute transient edema of the gastrointestinal tract in about thirty-four per cent. of the cases. In the milder cases the pains in the region of the stomach are more or less intense but they disappear rapidly. In more severe cases the pain may become so intense that Rapin termed it abdominal migraine. There is frequently associated nausea and vomiting. The vomiting consists of pure gastric secretions sometimes mixed with bright red blood. At times the clinical picture simulates gastric crises.

In other cases, the intestinal symptoms predominate. The pain is colicky in nature confined to the lower abdomen, accompanied by marked abdominal distention and obstinate constipation. The pain may localize itself in the ileocecal region giving rise to symptoms of appendicitis or in the sigmoid region simulating sigmoiditis. In either case the diagnosis is soon cleared by the presence of bloody stools. The differential diagnosis between sigmoiditis and angioneurotic edema of the intestines may be determined by the fact that in sigmoiditis there is a tendency to diarrhea, the bloody stools are more profuse and the duration of the disease is much longer. In cases where diarrhea is a marked symptom there is excessive thirst, diminution in the urinary output and marked exhaustion. Cases are reported where the colicky pains are of such severity as to simulate a surgical disease and lead to unnecessary laparotomy. The temperature is often normal but may be moderately elevated. Some cases have been reported where high temperature was present for a few days. Where the gastrointestinal symptoms are preceded or accompanied by skin manifestations in the form of urticaria or angioneurotic edema, the diagnosis is simple. Cases, however, are encountered where the gastrointestinal symptoms set in a few days before the skin manifestations or where there are no skin manifestations at all, making the diagnosis very difficult or impossible.

The symptoms have a great tendency to recur. They usually affect several members of the same family but not necessarily during the same time. The familial relationship is as a rule characterized by the fact that not all the members get gastrointestinal symptoms at the same time. One member may get only skin and another one only gastrointestinal manifestations. I know a woman who suffers from time to time with angioneurotic edema. One attack was accompanied by edema of the glottis which cleared up very quickly by adrenalin. One of her children suffers from attacks of asthma and angioneurotic nasal manifestations and another child from gastrointestinal symptoms.

The pathogenesis of the disease is not definitely established. The studies of Cook, Walker, Rolleston, Widal and others, show that this affection is probably due to protein sensitization. The hypersensitiveness to the proteins is as a rule acquired during life. The hypersensitiveness which is at first latent becomes manifest by protein intoxication. Very often the hypersensitiveness is not due to a single but to a number of proteins. Numerous experiments have been performed to prove that protein sensitization is a great factor in this disease. Of the many experiments recorded the one of Phillips is the most striking. Phillips fed a five months' old bulldog for the first time the protein of pork and this was immediately followed by vomiting, bloody diarrhea and edema of the skin. The symptoms lasted forty-eight hours. One year later this dog showed definite skin reaction when protein of pork was rubbed into the skin. Another dog suffered from the same symptoms when preserved fish was fed to him.

It may, therefore, be assumed that in the majority of cases of angioneurotic edema, there is an individual predisposition where the lymphatic apparatus irritated by certain proteins causes an increased secretion of lymph or increased permeability of the small lymph vessels bringing about edema of the tissue supplied by these vessels. In the majority of cases the hypersensitiveness manifests itself by the oral administration of the respective proteins. In rarer cases the subcutaneous injection may bring about the symptoms.

Although there is no doubt that the exciting cause is the hypersensitiveness to certain proteins, it cannot be denied that the inherited constitutional neuropathic element is an important factor. This explains why psychical influences and excessive mental strain so frequently bring on the symptoms. Bolton demon-

strated experimentally that angioneurotic edema is the consequence of sympathicotonia. His work, however, is by no means conclusive.

Prophylaxis may be a great factor in individuals whose predisposition to vascular changes is marked. It is unfortunate that the social conditions of the patient play so great a rôle in the carrying out of such treatment. Prophylactic measures in the asthenic type should be carried out even during puberty through well regulated physical exercise thus training the circulatory system at large and the gastrointestinal tract in particular. An effort should be made during puberty to overcome constipation by proper diet and abdominal massage and not by laxatives and enemas. The diet should be nutritious, consisting of five small meals daily. Fluids should be restricted, especially with meals. A well fitted abdominal binder is beneficial. Hydrotherapy in the form of daily lukewarm baths and cold shower baths followed by friction should be resorted to.

In the plethoric individual, prophylaxis should be in the form of diet and exercise. Caloric intake should be limited in order to avoid overweight. If there is a tendency to overweight the following is suggested: a starvation day once in ten or twelve days consisting of green vegetables, some fruit and buttermilk. The loss of weight on such a starvation day may be two or three pounds. The patient should be ordered to keep within his diet so that the two or three pounds lost should not be regained within the next twelve or fourteen days. Following such a procedure the patient in the course of the year may lose twenty-five pounds or more, thus keeping at the desired weight. The encouragement of rapid loss of weight is harmful in individuals who have a tendency to circulatory weakness. In the plethoric type the hydrotherapeutic procedure may be more strenuous (warm baths, cabinet baths, general body massages, especially the abdomen). A patient will be greatly benefited by a month's visit to one of the spas.

If the symptoms indicate organic changes, such as erosion or ulcer of the stomach, appropriate treatment should be enforced. One should remember that in these individuals the organic symptoms are masked by the general nervous manifestations and we should not be misguided in treating these individuals as neuropaths which so often leads to disastrous results to the patient.

The severe abdominal pains in dyspragia intestinalis are very resistant to treatment. Morphine and atropine are indispensable in very severe attacks. Meteorism is a very troublesome symptom. This should be treated by colonic irrigations and turpentine stupes. Pituitrin is not useful in these cases. Suppositories of codeine sulphate one half grain and luminal two grains once or twice a day for a few days will relieve pains. Vomiting is also a troublesome symptom and frequently gastric lavage must be resorted to; it is not contraindicated unless the blood pressure is very high. The diet should be restricted (strained barley soup, tea with milk, yolk of eggs, vichy). The symptoms very often disappear abruptly as in tabetic crisis.

The severe attacks of abdominal angina may be combated with nitroglycerin and by prolonged use of diuretin and physical and mental rest. Dietetic régime should be managed according to arteriosclerosis. Such a patient should have complete rest one day each week. Absolute inactivity should never be enforced except in advanced cases. Proteins should be restricted to seventy to eighty grams a day and a minimum of sodium chloride should be allowed. It is often necessary to use for a longer time diuretin with some anodynes, such as pantopon one third grain or papaverine one third grain.

During the free interval cases of abdominal angina are favorably influenced by carbon dioxide baths which are to be taken only under proper supervision. If the blood pressure is increased after these baths, the treatment should be discontinued. Hemorrhages from the stomach or intestines do not as a rule necessitate very active treatment as they have a tendency to stop abruptly. In severe cases, however, if the hemorrhage does not cease upon the application of ice coil over the abdomen or the hypodermic use of morphine, the intravenous injection of ten c. c. of five per cent. calcium chloride, ten c. c. of hypertonic sodium chloride solution or intramuscular use of ten per cent. sodium citrate as advocated by Neuhof and Hirschfeld, may be resorted to. Hypodermoclysis in blood transfusions are seldom necessary in these cases. It need hardly be mentioned that individuals with outspoken evidence of arteriosclerosis should be guided in their physical and mental duties.

Treatment of mesenteric thrombosis is surgical. In most cases, however, the primary disease is of a fatal character and surgery is usually ineffectual.

The acute attack of angioneurotic edema is at times favorably influenced by the subcutaneous administration of ten drops (1-1,000) adrenalin solution every half to one hour for three or four doses. Two injections daily may be given the next three or four days. Internally, calcium may be administered either in the form of calcium lactate ten grains three times a day or what is more effectual five c. c. of five per cent. calcium chloride intravenously. One must be careful that not a drop escape under the skin, as the calcium chloride is very irritating and causes sloughing of the skin. In order to prevent recurrent attacks, desensitization tests carried out by one well trained in the interpretation of the results should be performed. The results of such examinations are often disappointing. It is also best to instruct the patient to be observant of his diet, in order that he may notice the articles of food which bring about the symptoms. It may be laid down as a rule that sea food and berries should be avoided. If the desensitization test demonstrates the foods that are the causative factors it is not absolutely necessary to exclude these articles of food. It may be best to follow the method advocated by Eskuchen which consists in allowing the patient small quantities, not exceeding one half to one gram, of food to which he proves sensitive and ten to fifteen minutes later more of the same food may be taken without any ill effects. It is to be understood that most subjects are neuropaths and often proper treatment by neurologists and psychoanalysts proves effectual.

SUMMARY

1. Attention is called to a group of gastrointestinal symptoms caused primarily by changes in the bloodvessels supplying the gastrointestinal tract.

2. The symptoms are caused by vascular changes of an angioneurotic or angiosclerotic nature. The

angioneurotic element predominates in cases occurring before middle age, whereas arteriosclerotic changes predominate after middle age.

3. In cases where the angioneurotic element predominates the symptoms are mainly of functional nature and hence such persons are wrongly interpreted as psychopaths.

4. Arteriosclerotic changes in the gastrointestinal vessels may be more marked than in the other vessels of the body. As a rule, however, the condition is associated with general arteriosclerosis. Gastrointestinal symptoms caused by angioneurosis occur far more frequently than is ordinarily appreciated.

5. Both angioneurosis and angiosclerosis are found most commonly in the two extreme types of subjects; the asthenic type and the apoplectic type. In the former the angioneurotic symptoms precede by many years the angiosclerotic symptoms, whereas in the latter type angiosclerosis is the cause of the symptoms.

6. During both the angioneurotic and the angiosclerotic state, pathological changes develop in those organs supplied by the affected vessels.

7. Angioneurosis of the gastric vessels may lead to gastric spasticity. This condition if persisting for longer periods of time may cause erosion and ulcer formation. Arteriosclerosis of the same vessels, interfering with the nutrition of the stomach, may likewise lead to gastric ulcer.

8. In cases where the gastrointestinal symptoms are marked, and general nutrition is disturbed, the symptoms may simulate malignancy.

9. The diagnosis is extremely difficult and can be made only in the presence of arteriosclerotic changes in other parts of the body and where organic disease of the gastrointestinal tract may be ruled out.

Transposition of All the Viscera*

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While transposition of all the viscera is not an infrequent occurrence, it is most unusual to have two members of one family exhibiting this condition.

Aristotle (1) observed quadrupeds showing transposed liver and spleen. The first record of transposed viscera in human beings was made by Gemma (1) about the middle of the sixteenth century. Percussion and auscultation, as aids in recognizing the condition during life, were discussed in 1824 (2). Röntgen study of visceral transposition was made in 1897, and Nicolai (3) and Hoke (4), in 1911, described the earliest electrocardiographic curves in this condition.

A survey of the literature indicates that to date there have been reported or collected principally by Gruber (5), Küchenmeister (2), Arneill (5), Schelenz (1), and Sherk (6) over 270 cases of transposition of all the viscera. The condition is said to occur almost twice as frequently in men as it does in women (5). There is no record of its being observed in parent and child. There seems to be only one other instance of two cases in the same family (7). The underlying determining factor is not known. The consensus of opinion seems to trace the abnormality to an altered relation of the embryo to the primitive chorionic villi (8) at a very early stage of embryonic life. Willius (9) assumes that the "embryo lies in an abnormal position within the chorion, so that its right side instead of its left lies closer to the blood supply."

Uncomplicated transposition of all the viscera offers no symptoms, and has no clinical significance. The incidence of disease is the same as in normal individuals. It is interesting to note that most persons with transposed viscera develop a normal speech centre (in the left side of the brain), and are right handed. The normal clinical signs of the organs are clearly demonstrable on the opposite side of the body. Röntgen studies confirm the clinical findings. Electrocardiographic tracings show the pathognomonic sign of inversion of all waves of Lead 1, and the small excursions of waves of Lead 2.

The diagnosis of transposition of all the viscera depends upon a careful physical examination of the bared chest and abdomen. There is no pulsation, dullness or flatness over the precordium, or distinct sounds over the usual apical region. The heart sounds, if heard at all, seem distant. Upon shifting the stethoscope to the right mammary region, the condition is at once suspected. A visible systolic impulse, if not previously observed, in the right midclavicular line, cardiac dullness and apical sounds over the corresponding area on the right side clinch the diagnosis of dextrocardia. In addition, the apparent freedom from any grave constitutional disease, the absence of signs of any gross pathology in the chest that might possibly displace the heart to the right, and the presence of signs of lung tissue over the normal cardiac area make transposition of the heart quite evident. Attracted to the examination of the abdominal viscera one is surprised to find no dullness in the right hypochondrium, but, instead, distinct tympany, and, perhaps, peristaltic sounds below the heart dullness. The left hypochondrium, on the other hand, shows hepatic signs from the fifth rib down to the costal margin, or below it. There is no normal gastric tympany.

The differential diagnoses of thoracic and abdominal conditions are so greatly assisted by the positive signs of the transposed viscera that, having found these, the signs of possible pathological conflicting conditions in either body cavity need not be discussed. The additional evidences furnished by the fluoroscope, the x ray and the electrocardiogram are valuable records in corroborating the diagnosis. According to Lewis (10), "The electrocardiographic test is the most certain means of differentiating" displacement from transposition of the heart.

The prognosis of such a patient's disease is uninfluenced by the existence of the anomaly. Gruber

*Presented before the Northern Medical Association, December 12, 1924. From the Department of Medicine, Jefferson Hospital.

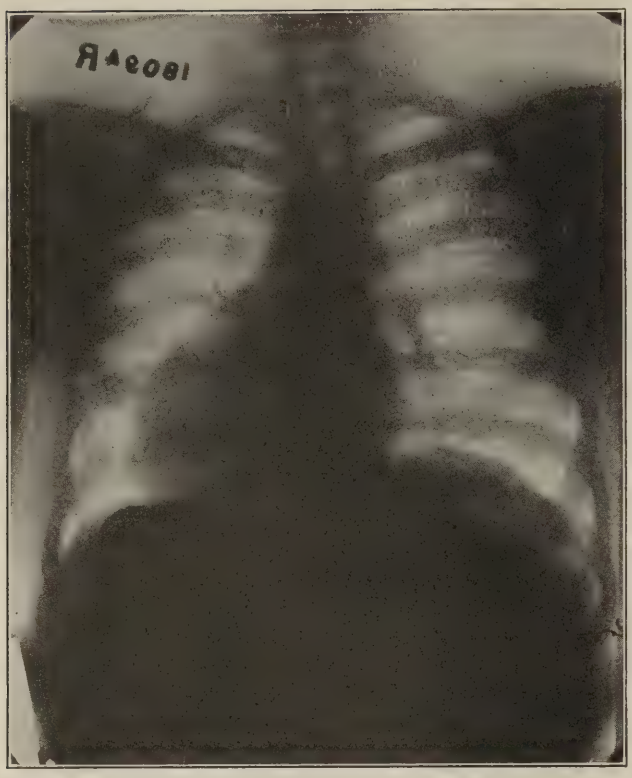

Fig. 1.—Transposition of the heart. The right diaphragm is lower than the left, and the liver is on the left side.

Fig. 2.—Transposition of the pylorus, duodenum, cecum, and sigmoid flexure of the colon.

(5) found five of the nineteen females lived to an age of between seventy and eighty-four years.

The following four cases present the very rare incidence of two members of one family having this condition. There was no complaint referable to the anomaly in any one of them. All were of average intelligence, right handed, and showed no outward abnormality. No other member of the three unrelated families showed any gross anomaly.

Case I.—A. B., a girl nine weeks old, was brought in for treatment for her cough. The heart appeared to be on the right side of her chest. Eight months later, February, 1918, she had an attack of lobular pneumonia, from which she made an uneventful recovery. Subsequent reexaminations confirmed liver dullness on the left side, and gastric tympany on the right.

Case II.—P. L., a boy of nine years, was found to have the heart sounds on the right side of the chest. He was born prematurely, at seven months, and is said to have weighed four pounds. His family and past personal history was of no clinical importance. His apex beat was visible and palpable on the right side, fifth interspace, at the midclavicular line. The left border of cardiac dullness corresponded to the left border of the sternum, the right border was 8.5 cm. to the right of the midsternum. An apical systolic murmur not transmitted, was audible after exertion. Percussion revealed hepatic dullness to be on the left side, and gastric tympany and splenic dullness were clearly demonstrable on the right. The spleen was not palpable.

Case III.—H. H., male, twenty-eight years of age, complained of backache. Examination revealed the heart signs on the right side of the chest, liver dullness on the left, and gastric tympany on the right side. He had a positive Wassermann, and proved to have tertiary syphilis.

Case IV.—A. B., a sister of H. H., was discovered in the course of examination of the other thirteen members of the three generations of the family. She was twenty-three years old, married. Her family and personal history was negative. She had given birth to four boys, two of them twins. One of the twins succumbed to socalled yellow jaundice at the age of two months. She did not know whether the infant had any anomaly. She had all signs of a normal heart in the right side of the chest. Liver dullness was found on the left, and gastric tympany and splenic dullness on the right.

Röntgenographic examination of the four patients showed transposition of the heart, the apex being on the right side. The right diaphragm was lower than the left. The liver was shown on the left side (Fig. 1). Cases II, III and IV showed the cardiac end of the stomach on the right side. The pylorus, the first portion of duodenum and the cecum were on the left, and the sigmoid flexure of the colon on the right, indicating a transposition of the stomach, pylorus, duodenum, cecum and sigmoid flexure of the colon (Fig. 2). Electrocardiographic studies were made of Cases II, III and IV which illustrated the transposition of the heart.

SUMMARY

Four cases of transposition of all the viscera are reported, two of them being members of one family.

The simplest way to diagnose transposition of the viscera is to make a careful physical examination of the patient's bared chest and abdomen.

Electrocardiograms and references will be published in the author's reprints.

Experiences with Cholecystography*

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(*From the Lenox Hill Hospital.*)

Recognition of biliary tract diseases has been greatly advanced by the direct examination of the bile and by röntgenography of the gallbladder area. Up to a short time ago the x ray showed gallstones in about twenty-five to thirty-five per cent., and gallbladder lesions by indirect evidence, concavity of cap or fixation of the latter to the under surface of the liver by gallbladder adhesions. In another group of cases the shadow of the gallbladder could be recognized and was then usually considered pathological. Inasmuch as seeing an object is our greatest asset for becoming well acquainted with it, it must be considered of greatest importance to possess a method of actually visualizing the gallbladder. This has been accomplished by Graham, Cole and Copher (1 and 2) by the intravenous injection of the sodium salt of tetrabrom or tetraiodo phenolphthalein.

Regarding the intravenous injection of this new method of examination of the gallbladder the above mentioned authors give the following instructions:

"Four and five tenths to five grams of the sodium salt of tetrabrom phenolphthalein are dissolved in forty c. c. of freshly distilled water and filtered. It is then given intravenously with a syringe in two doses, one half hour apart, when fasting. Care should be taken not to allow extravasation into the extravascular tissue on account of the danger of tissue necrosis. The injection is given between 7:30 and 9:30 a. m. and the following rules observed:

1. Omit breakfast.
2. Omit lunch. (A glass of milk may be given if hungry.)
3. Take sodium bicarbonate 2.6 grams every three hours for forty-eight hours.
4. Lie on right side of abdomen or be up.
5. Take water.
6. Omit protein from the evening meal when injected.
7. Take x ray at four, eight, twenty-four and thirty-two hour periods.

"Dizziness and vomiting are occasionally observed following the injection, also a slight drop in the blood pressure, which is greatly helped by the intramuscular injection of adrenalin (1:1,000) 0.5 to one c. c."

Graham and his coworkers give the following summary of their work:

1. Cholecystography has been shown to be possible by a variety of substances.
2. The criteria that distinguish the normal from the abnormal biliary tract have been established.
3. With the aid of this method we have been able to make a correct diagnosis in ninety-five per cent. of the cases of cholecystitis, with or without stones, which it has been possible to verify by operation and pathological examination of the gallbladder.
4. This method has proved to be accurate, even in cases of very early cholecystitis.

*Read before the American Gastroenterological Association, May 26, 1925, at Atlantic City, N. J.

Gosset and Loewy (3) have employed the tetrabrom phenolphthalein intravenously for the x ray visualization of the gallbladder and have been satisfied with the results. They mention unpleasant symptoms in some of their cases, which, however, passed off without any serious disturbances. These writers also made use of cholecystography in combination with barium in the x ray examination of the stomach and duodenum in order to show the relations of the gallbladder to the duodenum. This method is of great import in the differential diagnosis between cholecystitis and pyloric or duodenal ulceration.

Since June of last year the authors have undertaken a study of this new important procedure on a greater number of patients and take pleasure in reporting their results.

For brevity's sake we compiled a table showing the names of all the patients in which the Graham test by the intravenous injection was applied, stating the results obtained. In one case of this series the tetrabrom phenolphthalein was given through the duodenal tube, inserting the solution into the descending portion of the duodenum.

Table I is a review of cases in which the sodium tetrabrom phenolphthalein was given according to Graham, Cole and Copher. We find the following:

In about ninety per cent. of the cases the shadow of the gallbladder was distinct, and permitted us to say whether there was any pathological condition of this organ, with regard to form, size, location and function. In ten per cent. of the cases no distinct shadow could be seen, indicating obstruction of the cystic duct or thickened wall gallbladder.

In a number of cases in which the usual examination of the gallbladder region gave a negative shadow with regard to the presence of biliary calculi, the Graham test showed stones very distinctly. This is due to an imbibition of the upper layers of the calculi with the bromide salt or the negative shadows cast by soft gallstones when in contact with the opaque bile.

Thirteen patients of the cases reported in this table have been operated upon. The results of the operative findings tallied in all with regard to the pathological condition of the gallbladder, and also with regard to the presence of stones, excepting one.

Of the thirty-eight cases thirty-one showed reactions in the nature of slight nausea, headache and vomiting after the tetrabrom salt. In the majority of cases the reactions were mild and passed off very rapidly. In a few, however, the reactions were quite severe. Among these we encountered severe vomiting, chills and fainting.

Silverman and Menville (4) have employed the Graham method in order to decide whether nonsurgical biliary drainage is possible and have arrived at the following conclusions:

TABLE I

CASES IN WHICH CHOLECYSTOGRAPHY WAS PRACTISED AFTER PREVIOUS INJECTION OF TETRABROMPHENOLPHTHALEIN (IN THIRTY-SEVEN CASES INTRAVENOUSLY AND IN ONE DUODENALLY).

Name	4 hrs	8 hrs.	24 hrs.	No Shadow	Op. Findings	Bile Findings	Reaction
T-n	..	..	+	..	iLS	Coal black, tarry, turbid, cholest. and bunchberry crystals.	Nausea[1]
G-e	+	..	..	..		.....	None
T-o	+	..	..	..		Yellow, grreen, very turbid, bunchberry, small cholest. crystals.	Nausea and vomiting
R-m	..	..	..	—		Yellow, very turbid cholest. crystal.	None
W-r	+	..	..	..		Greenish tinge, yellow turbid, bunchberry cholest. and black crystals.	Chills[2]
C-n	+	..	..	..		.....	Severe headache
G-r	+	..	..	..		.....	Severe headache and vomiting
L-o	+	..	..	..	NGB	.....	Chills, nausea
A-n	+	..	..	..		.....	None
W-t	..	..	..	—	iSCD	.. ..	Chills, fainted
W-r	+	..	..	..		.....	Mild
B-t	+	..	..	..		.....	Mild
S-e	+	..	..	..	iv S	Dark yellow, turbid, cholest. and blackish crystals.	None[3]
S-l	+	..	..	..	vi S	Light yellow, slightly turbid, bunchberry and cholest. crystals.	Nausea[4]
C-s	+	..	..	..	PGB	Greenish yellow turbid, cholest. and blackish crystals.	Severe vomiting
M-r	..	..	..	—	PGB	Yellowish, very turbid, little bile, pus cells.	None[5]
K-h	+	..	..	..	NGB	....	Chills, vomiting
A-s	..	..	..	—		Dark brown yellow, very turbid. Bunchberry crystals and bacteria.	Mild[6]
H-a	..	..	..	—		.....	Mild
G-n	+	..	..	..		Greenish yellow, very turbid.	Mild
C-t	..	..	..	—		Yellow brown, turbid, bunchberry crystals.	Very severe, fainted[7]
S-z	..	..	..	—		Brown yellow, green and blackish crystals.	Mild
L-p	..	+	..	..		Dark yellow, turbid, bunchberry and cholest. crystals.	Mild
H-n	..	..	..	—		.....	Vomiting
R-s	..	..	..	—	NGB	.....	Chills, vomiting
S-a	..	..	+	..		.....	Severe, fainted
B-r	+	..	..	..		Dark green, very turbid, black crystals, bilirubin, mucus.	Headaches[8]
S-z	..	..	+	..		Dark yellow, turbid, cholest. and bilirubin crystals.	None
N-s	..	+	..	..		Light yellow, turbid, pus cells and few cholest. crystals.	Mild
Z-f	..	..	..	—		.....	Mild[9]
T-r	+	..	..	..		Dark brown yellow, cholest. and bunchberry crystals, bacteria.	Very mild
G-s	+	..	..	..		Brownish part. cholest. and bunchberry crystals, pus.	Mild
K-z	+	..	..	..	NGB	Dark yellow, very turbid, chol. crystals, mucus.	None
G-m	..	..	+	..	NGB	Light yellow, very turbid, brownish part. chol. crystals.	Nausea and vomiting
S-h	+	..	..	..		.....	Severe vomiting[10]
S-r	+	..	+	..	PGB	Light yellow, slightly turbid brown part. chol. crystals.	Severe vomiting[11]
S-y	+	..	..	..		Dark yellow turbid, blackish and bunchberry bilirubin crystals.	Mild
H-e	+	..	..	..		.....	Severe, fainted

Remarks

[1]Large stone visible surrounded by an opaque ring.

[2]Patient intensely icteric; four stones are visible.

[3]In the gallbladder shadow, four big stones lying on each other are visible.

[4]In the gallbladder shadow, six big stones are visible.

[5]Patient icteric. At operation the gallbladder was found embedded in dense adhesions and the cystic duct compressed by an enlarged chronically inflamed pancreas.

[6]Gallbladder previously drained.

[7]Previous cholecystectomy. The test was made in order to see whether the gallbladder will be found absent.

[8]Situs Inversus. The gallbladder shadow was here found on the left side, under the liver.

[9]Given by the duodenal tube.

[10]The gallbladder was found very much enlarged (three to four times the normal size) indicating distinct pathology.

[11]A very small gallbladder, similar in size to the small finger was found. The operation confirmed the x ray findings.

"1. The duodenobiliary drainage following a single stimulation with magnesium sulphate solution produces a reduction in size and alteration in shape of the gallbladder shadow when visualized by the Graham method. Plates taken at intervals up to twenty-four hours after the injection of the dye, but without drainage, show no parallel diminution in size or alteration in shape of the shadow.

"2. Since nonsurgical biliary drainage reduces the size and alters the shape of the gallbladder, we are led to conclude that drainage of the gallbladder does take place."

Anyone who looks over the pictures given by Silverman and Menville will arrive at the following conclusions:

Fig. 1 appears smaller than Fig. 2 with regard to the gallbladder shape. This contradicts the statement that the gallbladder without magnesium sulphate drainage never changes in size or shape. Comparing Fig. 3 (gallbladder thirteen hours after injection of the dye and immediately before nonsurgical biliary drainage) with Fig. 4 (gallbladder shadow after nonsurgical biliary drainage of twenty minutes' duration; reduction in size and alteration in shape of gallbladder shadow) you will notice that there is no reduction in size in Fig. 4 as compared with Fig. 3, Fig. 4 looking rather larger. The only difference with regard to shape is that in Fig. 4 the neck of the gallbladder seems narrowed.

We have made a few experiments regarding this question in four patients. The procedure was as follows:

First we ascertained whether peptone or magnesium sulphate instilled into the duodenum produced a good color reaction (i. e., dark bile). The following day tetrabrom phenolphthalein was injected and as soon as the röntgen examination demonstrated the gallbladder, either peptone or magnesium sulphate was instilled into the duodenum and a half hour later another observation made. The gallbladder shadow before the instillation could thus be compared with the one taken after the instillation of the peptone or magnesium sulphate. We give these experiments in the following table:

TABLE II

		Gall bladder visible after 4 hrs.	24 hrs.	Substance Instilled	Shrinkage
1.	T.	+	..	Peptone	None
2.	S.	+	..	Magnesium sulphate	Slight
3.	S.	+	..	Magnesium sulphate	None
4.	S.	..	+	Peptone	None

The table shows that there was once a slight shrinkage of the gallbladder after the magnesium sulphate while in the other three there was no change in the size of the gallbladder. The absence of an emptying of the gallbladder was noted notwithstanding the fact that all of the four patients gave distinct color reaction when the duodenal contents were drained after the peptone or magnesium sulphate instillation.

The experiments seem to indicate that the color reactions in these four cases were not due to the appearance of concentrated gallbladder bile (due to an emptying of this organ) but rather to the increased action of the liver (provoked by the instilled substance).

The necessity of administering the tetrabrom

Fig. 1.—Preliminary examination of the gallbladder before intravenous injection. (S-l)

phenolphthalein salt intravenously is a drawback for its widespread clinical use. An attempt was made to administer it through the duodenal tube, instilling the dye into the descending portion of the duodenum or in the beginning of the jejunum. However, the röntgen examination of the first patient gave a negative result. An article by L. R. Whitaker and Gibbs Milliken (5) suggested to us the use of sodium tetraiodo phenolphthalein. We were eager to test this substance in order to see whether the unpleasant symptoms occasionally occurring with the tetrabrom salt could not be obviated. Furthermore, we decided to administer the sodium tetraiodo phenolphthalein tentatively, both by the jejunal and oral methods.

Fig. 2.—(Same patient as in Fig. 1) Four hours after intravenous injection of tetrabrom phenolphthalein. Gallbladder visible with several large stones in same. (S-l)

In their important article Whitaker and Milliken arrive at the following conclusions:

"On account of the greater atomic weight of the iodine sodium tetraiodo phenolphthalein should be nearly twice as opaque to the x ray as sodium tetrabrom phenolphthalein.

"In practice nearly twice as much of the bromine salt as of the iodine salt is required to obtain a shadow of the gallbladder.

"Our experiments indicate no appreciable difference in the toxicity of the two drugs. Consequently for use in biliary cystography there appears to be a wide margin of safety in favor of sodium tetraiodo phenolphthalein over the analogous bromine compound."

Graham, Cole and Copher (6) coincide with Whitaker and Milliken that sodium tetraiodo phenolphthalein is preferable to the tetrabrom salt. They are now using it for cholecystography because smaller

Fig. 3.—Eight hours after intravenous injection of tetrabrom phenolphthalein. One stone visible in the form of a large ring. (T-n)

doses are sufficient to produce a shadow of the gallbladder. They administer 3.5 grams intravenously to patients weighing sixty kilos and have fewer and less marked reactions. The same technic is used as for the tetrabrom salt. Applying these substances orally the above authors have had variable and inconstant success in obtaining gallbladder shadows and prefer the intravenous method.

I. O. Palefski (7) administered two to four grams of sodium tetrabrom phenolphthalein through the duodenal tube. He obtained satisfactory gallbladder shadows and has seen no toxic effects. S. Weiss (8) has also given the tetrabrom phenolphthalein through the duodenum and rectum.

Based upon these statements we started to employ the sodium tetraiodo phenolphthalein for cholecystography, giving it, however, jejunally and orally instead of intravenously. At first four grams was given through the duodenal tube. Patients had unpleasant symptoms accompanied by vomiting and diarrhea. Notwithstanding the accidental loss of

Fig. 4.—(Same patient as in Fig. 3) Twelve hours after the intravenous injection of tetrabrom phenolphthalein. Stone more distinct. (T-n)

Fig. 5.—Eight hours after intravenous injection of tetrabrom phenolphthalein. Gallbladder visible and enlarged. Two stones in it and two probably in a dilated common duct. (W-r)

much of the tetraiodo salt the gallbladder shadow appeared quite distinctly in the röntgenograms. This showed that a smaller amount would be sufficient for our purpose. The dose was then reduced to two grams and given jejunally to seven patients. The gallbladder was satisfactorily mapped out in all the röntgenograms taken but two patients of this group complained of unpleasant symptoms, suffering from vomiting and shock. It was necessary to give them adrenalin and stimulation besides. The symptoms passed over in about six to twelve hours and the patients were completely recovered the following day.

These unforeseen symptoms compelled us to reduce the dose to 1.5 and 1.75 grams and the following rules were instituted:

The evening before administering the tetraiodo salt the bowels should be cleansed but no strong cathartics such as castor oil used. At the same time a preliminary examination of the gallbladder should be made. In patients who are not on duodenal feeding the tube should be inserted the night previous to the examination. At 6 a. m., provided the tube has reached the jejunum, give two hundred c. c. of milk (blood temperature) through the tube. At 8 a. m. one hundred and fifty c. c. of one half per cent. solution of the sodium tetraiodo phenolphtha-

Fig. 6.—(Same as 5) Twelve hours after intravenous injection of tetrabrom phenolphthalein. Gallbladder visible with one stone in same. Three stones in the dilated common duct. During the period between eight and twelve hours one stone has moved over from the gallbladder to the common duct. (W-r)

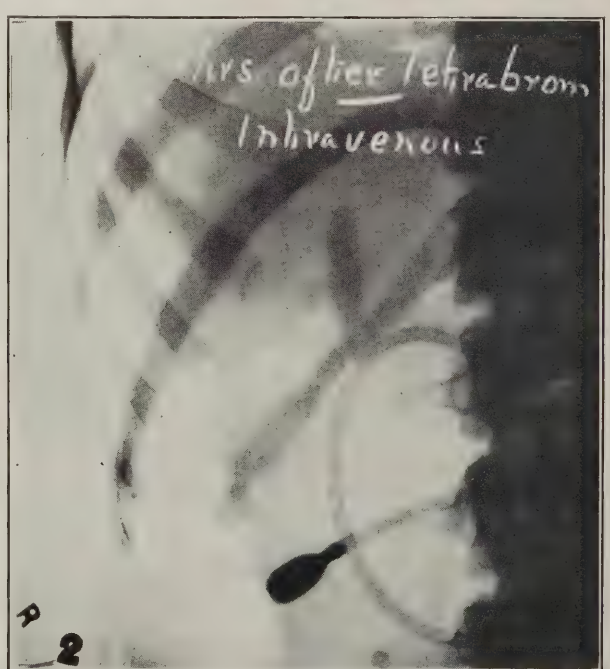

Fig. 7.—Twenty-four hours after the intravenous injection of tetrabrom phenolphthalein. A small contracted thickened wall gallbladder with a lumen of the size of a little finger visible. At operation a small thickened gallbladder, about the size of a little finger, was found. (S-r)

lein is instilled (slowly and at blood temperature) into the jejunum. After an interval of one half hour the same amount is again administered in like manner. The patient is requested to abstain from food from eight to twelve o'clock and remain in a quiet position. X ray examination of the gallbladder region is made at twelve o'clock followed by slight nourishment. At 4 p. m. and at 9 a. m. the following day further observations are made. Occasionally a röntgenogram is taken thirty-six hours after the administration of the tetraiodo.

The tetraiodo phenolphthalein was given jejunally to fifteen patients. Among eight patients to whom 2.0 per cent. solution was instilled there were severe reaction, nausea, faintness, shock, cold perspiration. In one of these cases the liver (Br) at the time of the reaction was considerably swollen; pulse fast and very thin; some dyspnea. After injecting adrenalin and stimulation with hot beverages patients recovered and were all right the following day.

Trying to avoid the reactions of the tetraiodo we gave 1.5 per cent. to 1.75 per cent., and in one patient with a weak heart 1.0 per cent. In all these cases there was practically no reaction.

The röntgenograms of the gallbladder with these smaller doses are less sharp than with the larger doses but sufficiently distinct to establish the exact shape of the organ. Our first and most important aim must be to minimize the dangers of the procedure and for this reason we recommend the use of the smaller doses.

In all fifteen patients the information regarding the gallbladder was important. In fourteen the gallbladder could be distinctly made out. In one patient (S), the fifteenth, with chronic jaundice, there was no gallbladder shadow present, due probably to occlusion of the cystic duct. The operation performed on this patient by DeWitt Stetten revealed two mulberry stones in the gallbladder, which contained no bile; occlusion of the cystic duct of an inflammatory type and chronic pancreatitis.

The tetrabrom as well as the tetraiodo phenolphthalein are likely to bring out the liver shadows and in some cases also the kidney shadows more clearly than when examined before the administration of this dye.

In some cases, therefore, it might be helpful to examine these organs after the employment of these dyes.

ORAL METHOD

Investigations made by the authors supported by results reported by M. Sosman, of Boston, Mass., who is using tetraiodo made up into pills and coated with salol, T. O. Menees and H. C. Robinson, of Grand Rapids, who are using tetraiodo in formaline hardened gelatine capsules, and L. R. Whitaker, Gibbs Milliken and Edward C. Vogt, of Boston, who now coat their tetraiodo pills with stearic acid, convinced us that the drug could be given by mouth and satisfactory results achieved. We now routinely use the oral method in all cases referred to our office for röntgenographic examination of the gallbladder.

The method of procedure is as follows: After a thorough cleansing of the intestinal tract, preferably by a turpentine enema, a preliminary examination of the gallbladder is made in the regular manner at

FIG. 8.—Eight hours after jejunal instillation of tetraiodo phenolphthalein. Gallbladder and a number of stones of varying sizes distinctly visible. (M-n)

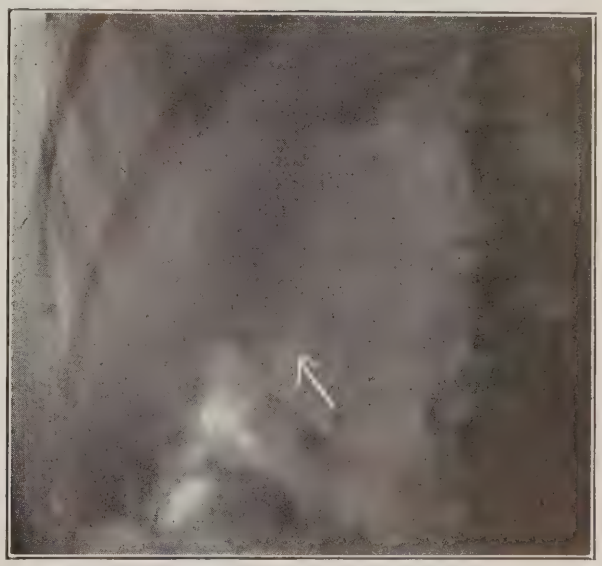

FIG. 9.—Eight hours after jejunal instillation of tetraiodo phenolphthalein. Gallbladder considerably enlarged. (B-t)

FIG. 10.—Four hours after jejunal instillation of tetraiodo phenolphthalein. Gallbladder immensely enlarged. (L-s)

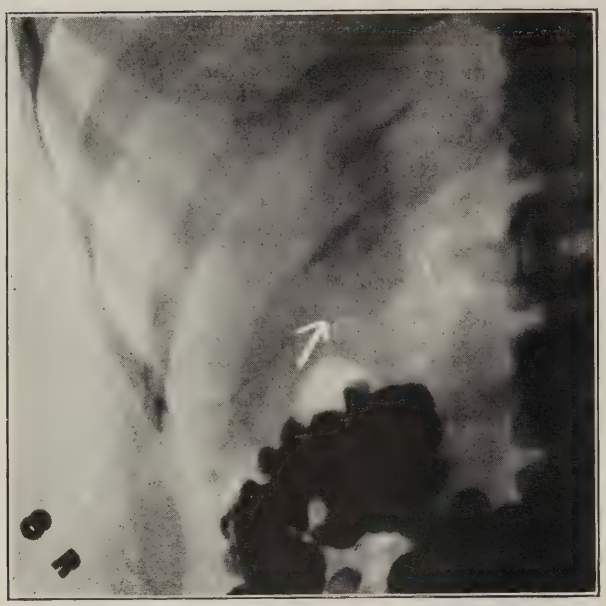

Fig. 11.—Twelve hours after oral administration of tetraiodo phenolphthalein. Gallbladder visible. Mottled appearance indicating small stones. (S-r)

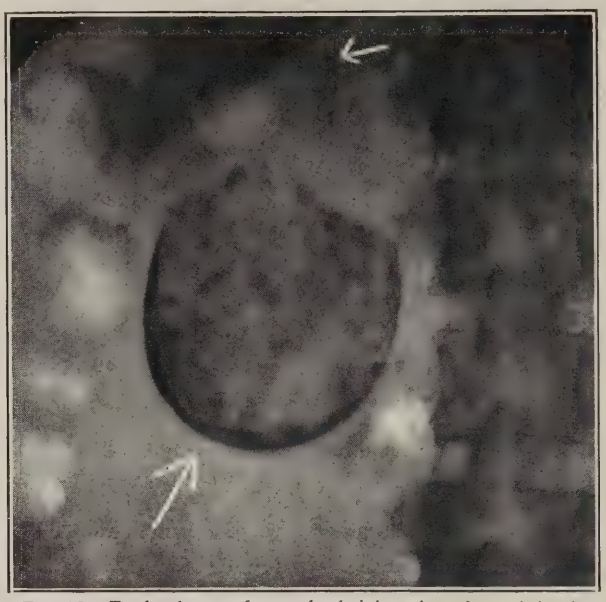

Fig. 12.—Twelve hours after oral administration of tetraiodo phenolphthalein. An immense gallbladder with calcified wall seen and in it numerous small stones. Operation confirmed these findings. (M-y)

10 a. m. The usual lunch is then allowed; at 6 p. m. a light supper is advised.

Forty grains of the tetraiodo phenolphthalein sodium salt, having been freshly made into eight five grain pills well coated with keratin or mutton tallow, the patient is instructed to commence at 9 p. m. and take two pills with a wine glass of water every fifteen minutes until all are taken.

At 8 a. m. the following morning a cup of coffee and one roll is allowed. At 10 a. m. the first röntgenographic examination is made. Four hours later, at 2 p. m., the examination is repeated. Regular lunch is served at 2:30 p. m., followed by another x ray examination at 4 p. m. The final observation is made the following morning thirty-six hours after the administration of the tetraiodo salt.

It is essential to make the preliminary examination before the administration of the tetraiodo to ascertain if there are any gallstones visible or shadows indicating a pathological gallbladder.

The starvation diet is necessary in order that the gallbladder may become distended with the opaque bile. The best outline is usually obtained at 2 p. m., sixteen hours after the tetraiodo. As soon as food is given the gallbladder, if normal, contracts and slowly empties as shown by the diminution in size and the more sharply defined detail to the shadow.

So far our patients submitting to the oral method, fifty-three cases in all, have had no serious reaction. About ten per cent. had a vomiting attack and perhaps twenty-five per cent. a slight nausea—five cases had a mild diarrhea.

TECHNIC

One must not be led to believe that with completion of the administration of the media the worst is over; these cases try the skill of the röntgenologist to the limit. Every known technical requirement is necessary to obtain satisfactory results.

Particularly should we gain the confidence of the patient; this is best accomplished by a quiet explanation of what is to be done and the purpose of the x ray examination. The patient should be carefully instructed to suspend respiration at full inspiration so that the gallbladder will be brought down to the lowest possible level. Full inspiration does not mean such a tremendous effort that the body is trembling from tension. Perfect relaxation is ideal. Never hurry your patient. Explain that plenty of time will be given for all requirements before the exposure.

The patient lies on the table, abdomen down with the chest slightly raised so as to open the costal arch as much as possible. The body of the patient should have a slight tendency to the left; at least the face should always be toward that side—this will throw the gallbladder shadow away from the spine, a fine technical point but most important, for in more than one instance gallstones have been overlooked by overlapping shadows of the vertebra.

The röntgenographic technic for gallbladder examination is variable. At the present time we prefer to use the Potter Bucky diaphragm with firm compression; a small cone at a distance of twenty-eight inches, a fine focus gas tube taking thirty-five milliamperes backing up about four inches and an exposure in an average individual of about three seconds. Double screens and films are used.

At least six films should be made at each visit to the röntgen department, for many may be worthless on account of some respiratory effort made by the patient during the exposure.

SUMMARY

Cholecystography (according to Dr. Graham) has found a permanent important place in medicine. The intravenous injection of tetrabrom phenolphthalein is frequently accompanied by reactions, which at times are of a severe type.

The administration of tetraiodo phenolphthalein by mouth or jejunum, not in large doses, is accompanied by less reactions, and is therefore preferable to the intravenous method.

We are indebted to Eggers, Erdman, Fischer, Garbat, Hensel, Willy Meyer, Sanders, Stetten and Torek for allowing us to use some of their cases.

References will be published in the reprints.

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The Itching Skin a Symptom of Systemic Disease*

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The dermatologist must still retain a somewhat cumbersome descriptive nomenclature. Even when the etiology has been fairly definitely established, the various skin pictures may not be designated merely by terms referring to the etiological agent. As an illustration I need only call attention to the necessity for classifying the variable objective manifestations of cutaneous tuberculosis. Nevertheless, dermatology cannot be approached with scientific seriousness without paying particular attention to the relationship of dermatoses to functional, pathological and biochemical changes in the body economy. There are, to be sure, a number of dermatoses which are apparently produced solely by parasites, but even the parasites need a favorable somatic soil to gain a foothold.

Neisser always emphasized the close relationship between dermatoses and systemic disease. His monumental studies on syphilis, leprosy, tuberculosis, and gonorrhea are witnesses to his viewpoint. He considered these diseases admirably adapted to demonstrate such a relationship.

Even the esoterist in morphological dermatology can obtain little but artistic satisfaction from a study of the lesions of the skin unless he approaches such study from the broad pathological viewpoint. The attitude of the investigating naturalist rather than that of the specialist must be assumed. With such an attitude, dermatoses, which are often regarded by the practising physician as a *noli-me-tangere,* will secure wider general interest. With this attitude it seemed to me that it would be of interest to discuss the itching dermatoses, especially emphasizing the somatic background in the light of general pathological principles. The etiology of many of these diseases has not been established, yet modern observations allow of interesting theories. Such an approach to dermatology simultaneously affords an opportunity to emphasize the necessity of a careful clinical and laboratory study of the patient, and to condemn the common practice of merely prescribing some local antipruritic.

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DERMATOSES WITHOUT CHARACTERISTIC SYMPTOMS

No group of dermatoses illustrates better the importance of systemic disease in the production of lesions of the skin than that comprised under the term toxic pruritus. As the name implies, the itching is the result of a toxic process, usually due to a disturbance in metabolism. The diagnosis can be made from the absence of all characteristic manifestations except those of a secondary character, such as pigmentation, excoriation, lichenification, and pyogenic infection. With some practice the diagnosis is readily made, and it then becomes necessary to cover almost the entire field of internal medicine in a search for the cause underlying the disturbance. For practical purposes, in cases of toxic pruritus, I examine carefully for the following diseases: 1, lymphogenic diseases, particularly Hodgkin's disease and lymphosarcoma; 2, hyperthyroidism and hypothyroidism; 3, chronic nephritis; 4, arteriosclerosis with or without senile skin changes; 5, enlarged prostate; 6, chronic intoxication due to drugs (opium and cocaine, coffee, tea, and so forth); 7, chronic disease of the liver and gallbladder, even without jaundice; 8, abdominal malignancy; 9, functional and organic nervous diseases; 10, diabetes, and 11, focal infections.

In the lymphogenic diseases itching is often the first annoying symptom. The patient is in seemingly excellent health and unless the underlying disease is suspected it is readily overlooked. A röntgenogram of the chest will often reveal a mass of enlarged nodes in the mediastinum, when superficially none is in evidence. Occasionally a sedulous search for nodes in the groins, axillæ, or cervical region will reveal one of unusual size. If the diagnosis has not been reached by other methods, such a node should always be removed for microscopic examination. We have thus been able repeatedly to clinch the diagnosis early. Patients often have severe pruritus for years before their general health declines. A patient was recently observed at the clinic who gave a history of severe itching for more than five years. When examined here he had extremely large axillary nodes. A specimen from one of these revealed a lympho-

sarcoma. Filtered röntgen ray treatments to the glands afforded marked symptomatic relief. The patient's local physicians had pronounced it the seven-year itch, and the patient was ready to bear the itching for another two years.

FUNCTIONAL DISEASES OF NERVOUS SYSTEM

I need not go into detail in regard to the other diseases enumerated. A careful history and physical examination should in most cases give a correct diagnosis. I would, however, like to emphasize a few points in regard to the functional diseases of the nervous system. Every effort should be made to exclude organic disease. It is only too easy to suspect a functional nervous background in these patients since the prolonged severe itching with its concomitant loss of sleep has often made them very irritable and unreasonable. Moderate hyperthyroidism is especially prone to be overlooked. It has occurred to me that in the purely functional types of disease the itching is likely to be more or less localized. Sometimes it is the upper back, again the extremities, or some other part where it is particularly troublesome. When the itching localizes in the genital, perineal, or anal region, the disease is especially likely to be of a functional type. In such cases, however, careful search should be made for pelvic, rectal, and local cutaneous disease. In my experience this localized pruritus is usually not relieved, even when such abnormalities as hemorrhoids, rectal fissures, cervical scars or ulcerations, and displacements of the uterus, are treated. It is difficult to escape the impression that this type of pruritus is a definite psychogenic disorder. Sometimes mental complexes with reference to experiences connected with the genital sphere can be elicited by psychoanalysis. In this event such treatment will bring marked or complete relief.

In the functional group we will probably also have to consider the socalled pruritus estivalis and pruritus hiemalis, the phenomenon that certain persons itch in cold and others in warm weather. Closely related in its nature is the itching which troubles certain persons when wool or flannel is worn next to the skin, when undressing, or when cold linen touches the skin. Many of these patients have an unusually smooth pliable skin which is dry from lack of the usual amount of oily secretion. These patients are often much relieved by some emollient.

Pruritus senilis is probably explicable by the process involved in senile involution of the skin rather than on a functional basis. We know that not only the corium but also the epidermis, nerve end organs, and sebaceous glands undergo degeneration.

URTICARIA

A borderline position between toxic pruritus and the forms of pruritus with symptoms characteristic of dermatosis, is occupied by urticaria. We do not as yet fully understand the etiology of urticaria. Experience teaches that urticarial wheals are commonly observed after exposure to certain plants and insect bites, after the consumption of certain foods and medicaments, after certain mechanical irritations of the skin surface, and in the wake of certain psychic states.

Whether or not urticaria is a true inflammation need not be discussed here. There is practically no doubt but that there is a definite involvement of the nervous system; otherwise there would be no itching. It can probably also be assumed that there is some abnormality in the mechanism of the cutaneous cell and some biochemical disturbance in the other body tissues. The strawberry urticaria is particularly instructive in this connection. The ordinary chemism of the human skin is not so constituted that it will respond to the ingestion of strawberries with the formation of wheals. It would seem plausible, therefore, to assume the presence of a chemical acting somewhat as a sensitizing agent. In this connection it is striking to note that uric acid has often been found to be increased in the blood. The presence of histamin and cholesterin in the blood has been suspected. Many observers would like to look on urticaria as the result of protein sensitization. All these conceptions need further study, however.

DERMATOSES WITH CHARACTERISTIC SYMPTOMS

Of the dermatoses with the characteristic symptoms of itching, only those commonly seen will be discussed, as the rarer types have received insufficient study from the viewpoint of general pathology. In the former are included: 1, granuloma fungoides, 2, dermatitis herpetiformis, 3, lichen planus, and, 4, eczematoid dermatitis. I am ignoring scabies and pediculosis because they are not germane to the subject.

Mycosis fungoides is closely related to leucemia. A discussion of their relationship would be idle, however, since the exact etiology of neither is known. It is important that a diagnosis be reached early because it is only in the early stages that definite therapeutic results can be hoped for. Radiotherapy in combination with arsenic, either by mouth or injection, is the method of choice. Antipruritics locally are of no value except for the temporary relief from itching which they may afford.

Dermatitis herpetiformis is not so sharply defined in its clinical characteristics that we are justified in accepting a uniform etiology. There are cases in which it is difficult to distinguish between erythema multiforme and dermatitis herpetiformis, others again border closely on pemphigus. Another group will at one time show a dermatological picture of erythema multiforme, and at another time that of dermatitis herpetiformis, and in still another that of pemphigus. One group of authorities favors the view that bacteria or their toxins affect the nervous system and thus produce the eruption and its itching and burning. Another group is more inclined to believe that this disease is not of hematogenous origin.

Lichen planus is so characteristic in its manifestations that the assumption of a definite pathogenic process is plausible. We are still forced, however, to look on it purely in the light of clinical empiricism. Whether the process is purely local or whether it is a systemic disturbance is at present undecided. A nervous factor is commonly accepted because it is so often seen in association with psychic shock, anxiety, overwork, insomnia, excitement, and neuralgia. I have seen persistent lichen planus disappear promptly after the removal of several infected teeth. A bacterial etiology would be consistent with its histopathology.

Eczematoid dermatitis can probably not be considered an entity. It is difficult to escape the clinical impression that this skin picture is produced by two causes: the predisposing cause, a certain biological status, and the precipitating cause, the irritating substance responsible in the individual case. That there is a predisposing cause is probably best demonstrated in the professional and industrial dermatitis. It is often noted that probably only one of several persons exposed to the same irritating agent will show evidence of dermatitis. Just what change in the biochemical constituents is responsible for the predisposition has not been determined. It is entirely possible that changes in the blood and tissues are the results of various causes. In years past it was a fond belief that eczema was closely related to gout and merely one of the expressions of a gouty diathesis. This was of course based purely on clinical observation. Studies recently undertaken with reference to the chemistry of the blood show an excess of uric acid in a goodly percentage. Pulay believes that the tissues also contain an excess. Many authorities hold that eczema is an expression of the socalled exudate diathesis, analogous to hay fever, asthma, gout, and migraine. This assumption offers a fair working basis. It permits us to search for a history of hypersensitiveness to certain plant and animal proteins and subsequent desensitization or avoidance of the offending agent as in hay fever, the proper modification of the diet as in gout, and the regulation of the habits as in migraine.

It has been suggested that a deficient epinephrin content in the blood might account for the hypersensitiveness. The fact that eczema is often associated with low blood pressure and asthma, both benefited by epinephrin, lends color to this suggestion. It must be remembered, however, that the reduced epinephrin content may be merely the expression of intoxication. Lane seems to have shown that exophthalmic goitre may be the result of intestinal toxins.

In view of the clinical observation that eczema is very frequently associated with gastrointestinal disturbances, a close relationship would seem plausible. I believe that this relationship is best illustrated by the infantile eczemas, in which diet has been held responsible by most observers. Eczema has been attributed to the fats, to the proteins, and again to the carbohydrates, or to fermentation products in the intestine. It is entirely possible that all of these factors, and at times others, may be responsible. It is very probable that cases will have to be considered individually. We must remember that "one man's meat is another man's poison." As yet too little is known about the interaction and efficiency of the endocrine organs to determine what foods may have a deleterious effect in individual cases. The varying sugar tolerance in different, apparently healthy, persons is a case in point. I have seen a resistant case of infantile eczema clear up permanently after the elimination of butter from the diet, yet this same procedure may not benefit others at all. We are all familiar with the improvement observed when sweets are removed from the diet of an overindulged child.

At the Mayo Clinic certain children have been placed on extremely low fat, and others on very low carbohydrate diets without consistent results in either group. At present we favor a well balanced mixed diet, carefully observing the patient's stools and his weight and general reaction to the diet. Skin sensitization tests have not helped in the clinical management of these patients.

Certain authorities believe in neurogenic influence in eczema. The clinical study of patients frequently makes this theory seem plausible. It also gains support from certain definite scientific observations on the sugar metabolism. We are familiar with the glycosuria in certain nervous individuals. It has been demonstrated that venipuncture often suffices to produce hyperglycemia. It is conceivable that in such patients every excitement and every psychic insult leads to a hyperglycemia and thus to very definite metabolic disturbances.

In many of these patients a hypercholesterinemia is found. The significance of this is not as yet known, but it seemingly points to an abnormal metabolism as it is frequently associated with internal diseases almost certainly of metabolic origin.

There may be a disarranged relationship between food intake and consumption, either because of a poorly balanced or superabundant diet, or because of lack of the proper activity to dispose of the end-products of digestion.

Interesting also are the observations on the blood calcium. It has been shown experimentally that animals fed with calcium are less prone to exudative processes, whereas animals given large quantities of sodium will have a reduction of calcium. The calcium content in eczema has often been found to be low. This leads Pulay to the conjecture that, since calcium stands first in the cationic series with relation to its protein "swelling" qualities, it may counteract the shrinkage of the cells, which manifests itself clinically as an exudation.

While these various conceptions are as yet purely theoretic, they permit of a systematic approach to treatment. Each case should be studied separately and carefully to determine whether the evidence points most strongly to a neurogenic, dietetic, metabolic, toxic, or infective factor.

In considering the precipitating causes of eczema, we are confronted by a myriad of possibilities. Eventually every organic and most inorganic substances may prove to be offenders: the chemicals as employed in the household, industries, arts, sciences, and professions; flowers as found in the hothouse, home garden and fields; weeds around the house, in the fields and woods; animals kept as pets and for economic reasons; the various grains and vegetables, and the effect of either artificial light or sunlight.

The object of this paper is to emphasize the importance of regarding an itching skin as a signal of systemic disturbance which needs adjustment before we can give the patient proper treatment. The habit of merely prescribing some local antipruritic, so often indulged in, brings discredit to the profession. Small wonder that a patient sometimes receives more benefit from suggestion, baths, massage, diet, and exercise prescribed by the faker. Each patient with an itching skin should receive close individual study, as the associated conditions are so variable. Only such careful consideration, looking farther than merely symptomatic relief, will result in permanent relief from the trouble.

Dercum's Method of Treating Neurosyphilis

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Before presenting some of the cases of neurosyphilis which we have on record, and explaining our method of treatment, I shall give some of the important points which have been brought out by various authors in the use of the most popular methods of treating neurosyphilis. Judging from the literature and the report of various authors who have experimented extensively with it, tryparsamide is the drug of choice in treating neurosyphilis. Although it has not been released to the profession in general it will be, no doubt, in the near future, and to mention some of the important facts concerning its use as established by various clinicians will not be premature.

Tryparsamide contains twenty-five and thirty-two one hundredths per cent. arsenic and its characteristics as described by Brown and Pearce are as follows: 1, Comparative freedom from harmful effects; 2, a moderate degree of treponemicidal action; 3, an unusually high penetrability; 4, a remarkable power of reinforcing the processes of natural resistance and of promoting recuperation.

Lorenz and Loevenhart in a report of a hundred and eighty-five cases give the following conclusions in regard to the use of tryparsamide in neurosyphilis:

1. Tryparsamide and mercurial salicylate are therapeutically effective in early paresis, meningovascular syphilis and to a lesser degree in taboparesis, tabes, and advanced paresis.

2. The beneficial clinical results precede the improvement in the serology.

3. Definite paretic psychoses disappear as the result of treatment.

4. The mental restoration has persisted over a two year period.

5. Visual disturbances occurred in seven per cent. of the total number of cases treated.

6. In tabes and taboparesis twenty-three per cent. of the cases treated showed visual disturbances.

7. Of thirteen cases showing amblyopia during tryparsamide therapy, all but one cleared up after the withdrawal of the drug. Twelve of these cases were subsequently treated with tryparsamide without further eye disturbances.

8. A complete ophthalmological examination as to fundus acuity and visual fields should be done in every case before using the drug.

Tryparsamide is given in doses of three grams weekly for eight to sixteen injections. Injections of mercurial salicylate intramuscularly are either spaced in between the tryparsamide injections or given after the course of tryparsamide is completed. After a rest period, this course of treatment can be repeated if necessary.

The Swift-Ellis plan of treatment has many warm advocates and its technic as used by Fordyce is as follows: First, the usual injection of arsphenamine is given. Second, half an hour later, fifty c. c. of blood is withdrawn from the vein; this is placed on ice for four hours. Third, the blood is centrifuged and the serum is piped off under aseptic precautions. Fourth, this serum is inactivated by incubating at 56° C. for one hour. The object of this is to render inactive any bacteria that may be present in the blood stream. Fifth, a spinal puncture is done, the stylet is withdrawn, and at the same time the percolator is attached to the needle by a piece of rubber tubing six inches long. By holding the percolator below the level of the needle, the spinal fluid is allowed to flow into it. Then the inactivated blood serum is mixed with an equal amount of spinal fluid and allowed to flow through the needle by raising the percolator. Enough serum mixed with the spinal fluid is allowed to flow through the needle to replace the amount of spinal fluid withdrawn. The number of treatments vary with the severity of the infection. Fifteen to twenty-five injections constitute the average course.

We have used the Swift-Ellis method of treatment, but have not been pleased with it. We now use Dercum's method exclusively which consists of weekly injections of arsphenamine followed by spinal drainage. Following spinal drainage, on an average of three times in each case, we inject bichloride of mercury from one seventy-fifth to one ninetieth of a grain intraspinally. In addition, we give daily from one twelfth to one twenty-fourth of a grain of bichloride intravenously. When the veins become sclerosed and we can no longer inject the bichloride, we use weekly injections of potassium bismuth tartrate intramuscularly, spaced in between the arsphenamine injections. This treatment is continued until we get a negative spinal fluid Wassermann, and then bismuth is continued for at least ten injections. A spinal fluid analysis is done within three months and again in six months after treatment has been stopped. If found positive, further treatment is given.

Before giving you the results of this method in a few selected cases, I shall present some data on the serological findings in the various types of neurosyphilis:

I. PARESIS OR TABOPARESIS.

1. Wassermann reaction in blood positive (one hundred per cent.).
2. Globulin positive (ninety-five per cent.).
3. Lymphocytosis (ninety-five per cent.).
4. Wassermann spinal fluid.
   a. Positive in eighty-five to ninety per cent. with original method and two tenths c. c. of fluid.
   b. Positive in one hundred per cent. with larger quantities of fluid.

II. TABES AND CEREBROSPINAL SYPHILIS.

1. Wassermann reaction on blood positive in tabes sixty to seventy per cent. and in cerebrospinal syphilis eighty to ninety per cent.
2. Globulin reaction positive (ninety per cent.).
3. Lymphocytosis positive (ninety per cent.).
4. Wassermann on spinal fluid.
   a. Positive in five to ten per cent. with original method and two tenths c. c. fluid.
   b. Positive in one hundred per cent. with larger quantities of fluid.

TABOPARESIS

CASE I.—The patient, white, female, aged forty-five years, entered the sanatorium on April 10, 1924. Her family history was unimportant and her past history was also unimportant with the exception of an ectopic pregnancy for which she was operated on in 1922. Her menstrual history was negative, with no miscarriages nor still births.

Her present illness began four years ago when she began to feel irritable with depressed moods, frequent headaches and intestinal disturbances. On several occasions while driving a car she would suddenly feel faint with a sensation of blindness and would have to stop the car until the attack had subsided. Recently her memory had been defective, and there was marked muscular weakness and insomnia.

Neurological examination showed the Romberg, static ataxia, pupillary reflexes equal, regular in outline, reacting sluggishly to light and accommodation; speech and gait normal; cranial nerves intact; slight incoordination in upper extremities, deep reflexes of upper extremities normal; diminished bilaterally in lower extremities; sensation areas of anesthesia and hyperesthesia over body; superficial reflexes normal; circulatory, respiratory and gastrointestinal systems negative.

Laboratory report: Urine negative; blood Wassermann four plus; spinal fluid cell count 45, globulin increased, sugar sixty-five mgms. to one hundred c. c. Wassermann four plus in all antigens in smallest dilutions. Colloidal gold curve 5555443300.

Spinal fluid analysis: After five weeks' treatment: Cell count 80, globulin 28 mgms. to one hundred c. c. Sugar 110 mgms. to one hundred c. c. Wassermann; Kolmer antigen four plus. Cholesterinized antigen two plus. Noguchi antigen two plus. Colloidal gold curve 555534400. After four months' treatment: Cell count 3, globulin 16 mgms. per one hundred c. c. Sugar 65 mgms. per one hundred c. c. Wassermann one plus in all antigens. Colloidal gold curve 444420000. Six months after cessation of treatment: Cell count 5, globulin 15 mgms. per one hundred c. c. Sugar 65 mgms. per one hundred c. c. Wassermann negative in all antigens. Colloidal gold curve 144340000.

PARESIS

CASE II.—White male, aged sixty-two years. Entered sanatorium on September 8, 1923. His family history was unimportant. His past history showed that in 1921 he had had an attack of frequency of urination with a burning sensation. He was told by his physician that he had nephritis, but he refused treatment. He had a chancre thirty years ago, when he was thirty-two years of age, but no treatment was given at that time.

Present history: Two weeks previous to the time that we saw him, his symptoms were predominantly mental. His memory became defective, he had delusions of persecution, especially concerning women whom he thought were all trying to harm him; even his wife. Both visual and auditory hallucinations were present. His wife stated that he had been failing in health for the past six months; was very suspicious, irritable and forgetful.

Neurological examination: Romberg positive; pupils irregular in outline, unequal, right larger than left, reacted to light and accommodation sluggishly; marked arcus sensilis, and consensual and ciliospinal reflexes present; speech slurring; slight incoordination both upper extremities; tremor of both tongue and upper extremities; deep reflexes exaggerated, slightly more on left side; sensation normal; Babinski bilateral, more marked on left; circulatory, respiratory and gastrointestinal systems negative.

Laboratory reports: Urine: specific gravity 1.032, occasional hyaline and granular cast. Blood chemistry: creatinin 2.3 mgms. per one hundred c. c. blood. Uric acid 1.5 mgms. per one hundred c. c. blood. Urea 25 mgms. per one hundred c. c. blood. Blood Wassermann negative. Provocative blood Wassermann after two weeks on mixed treatment showed three plus in Kolmer antigen. Spinal fluid, four plus in cholesterinized and Kolmer antigens and negative in Noguchi in dilutions above two tenths c. c. Cell count 210, globulin increased, sugar normal. Colloidal gold curve 0055555432100.

Spinal fluid analysis: After one month's treatment, cell count thirty; globulin normal; Wassermann negative; colloidal gold curve 1333000000. After two and a half months' treatment, negative in every respect, including the colloidal gold curve.

CEREBROSPINAL SYPHILIS (MENINGOVASCULAR TYPE)

CASE III.—White female, aged twenty years; entered sanatorium November 11, 1924. Her family history was unimportant. Her past history showed removal of tonsils and adenoids when twelve years of age. She was of a very nervous temperament, and had suffered from indigestion for the past eight years. She menstruated regularly, but suffered from fainting attacks at time of menstruation. She has been treated for syphilis for the past two years. Up to the present time the patient had received twenty-two injections of salvarsan and eight injections of mercury, also mixed treatment. Blood Wassermann was positive up to July, 1924, when a negative report was received and treatment stopped.

Present history: The patient complained of a peculiar pressing sensation on top of head which she also experienced for one month in 1923. It returned this last time in January, 1924, following the sixth injection of salvarsan, and had continued to present date, November, 1924. She had a tendency to worry, was anxious over her condition, and had some social conflict.

Neurological examination: Romberg negative; pupils equal, regular in outline, reacting to light and accommodation; speech and gait normal; deep reflexes exaggerated all over; sensation normal; superficial reflexes present; circulatory, respiratory and gastrointestinal systems negative.

Laboratory reports: Urine negative; blood Wassermann one plus in all antigens; spinal fluid analysis, cell count 270, globulin 21 mgms. to one hundred c. c., sugar 75 mgms. to one hundred c. c., and Wassermann negative in all antigens; colloidal gold curve 4441000000.

Spinal fluid analysis: After six weeks' treatment, cell count 35, globulin 15 mgms. to one hundred c. c., sugar 65 mgms. to one hundred c. c., Wassermann negative; colloidal gold curve 5544332100.

The patient is under observation and a spinal fluid analysis will be made six months after the cessation of treatment.

SPINAL SYPHILIS (VASCULAR TYPE OF CERVICAL CORD)

Case IV.—White, male, aged twenty-five years, entered sanatorium January 28, 1925. Both family and past histories were unimportant. He had gonorrhea in 1920; denied having had a chancre.

His present illness began with pain in the left arm in May, 1924. In August of the same year he noticed that his left arm and shoulder were smaller than the right. He consulted a physician but refused spinal puncture at that time. There was a remission of symptoms at this time for a month's duration, then the symptoms returned, and the arm and shoulder became progressively weaker and more painful.

Neurological examination: Romberg negative; pupils equal, regular in outline, reacting to light and accommodation; speech and gait normal; cranial nerves intact, no tremors, slight incoordination of left upper extremity; deep reflexes, diminished left biceps and extensor, otherwise negative; grip diminished in left hand; sensation normal; superficial reflexes present; circulatory, respiratory and gastrointestinal systems negative.

Laboratory reports: Urine negative; blood Wassermann negative; spinal fluid, cell count 12, globulin 18 mgms. to one hundred c. c., sugar 60 mgms. to one hundred c. c., Wassermann four plus in .6 and .8 c. c. dilution in Kolmer and cholesterinized antigens; negative in Noguchi antigen; colloidal gold curve 001130000.

Spinal fluid report: After one month's treatment cell count was 5, globulin 16 mgms. to one hundred c. c., sugar 65 mgms. to one hundred c. c., Wassermann negative in all antigens; colloidal gold curve 0000000000. After six weeks' treatment, cell count 15, globulin 12 mgms. to one hundred c. c., sugar 60 mgms. to one hundred c. c., Wassermann negative in all antigens; colloidal gold curve 0000000000.

CONCLUSIONS

1. Neoarsphenamine combined with spinal drainage and reinforced with mercury both intraspinally and intravenously gives satisfactory results in the treatment of neurosyphilis.

2. When cases do not respond to neoarsphenamine or salvarsan, they often will respond satisfactorily to weekly intramuscular injections of potassium bismuth tartrate with butyn.

3. We have no set rule as to how much treatment should be given nor is any one specific drug used, and an attempt should be made to adapt the treatment to the needs of the patient until a negative spinal fluid Wassermann is obtained.

4. When a negative spinal fluid Wassermann is obtained, no case of neurosyphilis should be dismissed as cured. The necessity of further observation should be impressed upon the patient, also analysis of spinal fluid at three and six month intervals after cessation of active treatment.

5. Dread of spinal puncture is reduced to a minimum in these cases by using a small calibre needle and thoroughly anesthetizing with four per cent novocaine solution.

Pruritus Ani—Its Etiology, Diagnosis and Treatment

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Pruritus ani is not a disease but a most annoying symptom. It is a painful itching about the anus, and it has no established pathology. It is by no means a trivial complaint. The itching, often so intense as to be unbearable, sometimes causes insomnia and a breakdown in the health of the sufferer.

The etiological factors in pruritus ani are as numerous as the remedies suggested for its relief. Any disease of the rectum and anus may be accompanied by itching about the anal region. The most frequent local conditions which may cause pruritis ani are fissures, fistulæ, cryptitis, hypertrophied papillæ, proctitis, anal ulcers, and hemorrhoids. So frequently does itching accompany hemorrhoids that the laity have named the condition itching piles. The itching caused by hemorrhoids, however, is usually not severe.

Moist eczema, eczema marginatum of the anus, herpes, and erythema may be accompanied by pruritus ani. Pruritus ani may be caused by parasites such as pediculi, oxyuris vermicularis (threadworms), acarus scabiei (itchmite), or trichophyton (ringworm). Among diseases which may cause itching of the anus are glycosuria, diabetes, gout, rheumatism, uricacidemia, nephritis, syphilis, and hysteria. Stone in the bladder, chronic prostatitis, vesiculitis, cystitis, and urethritis may cause, reflexly, itching about the anus.

Toxemias of intestinal origin or anaphylaxis following the ingestion of certain foods may be accompanied by pruritus. It is commonly known that shellfish and strawberries are foods which frequently cause severe attacks of itching. Alcoholic drinks, excessive smoking, the use of tea, coffee, and condiments may cause this symptom.

Woolen clothing and clothing colored with poor dyes, or clothing which fits too snugly, or clothing which is so warm that it produces excessive sweating may be the cause of anal itching. Pruritus may be due to the use of irritating soaps, or antiseptics around the anus. There are a limited number of cases of pruritus ani in which it has been absolutely impossible to discover the etiological factor.

In certain patients who have suffered from pruritus ani for a long time there are abnormal conditions of the anal skin such as rugæ, thickening and marked pigmentation, which are undoubtedly secondary to the scratching.

Kiger, of Los Angeles, published a paper in 1918 in which he contended that at least some cases of pruritus ani were caused by infection in distant parts of the body; an infected focus, such as an alveolar

abscess; tonsillitis, frontal sinusitis, chronic appendicitis, or cholecystitis.

Terrell (1) expressed the opinion that the pathology of pruritus ani, with probably few exceptions, is to be looked for in the lowest inch of the alimentary tract.

Dwight H. Murray, of Syracuse, put forward the theory that in his opinion the vast majority of cases of pruritus ani were due to a chronic streptococcus infection. He asserted that a treatment which did not raise the phagocytic power of the blood could have no lasting benefit.

Frick (2) agrees with Murray that pruritus ani is a disease entity, that the constantly recurring Streptococcus fæcalis is the causative factor, that the local pathology is a low grade inflammation, that a cure results from an improved phagocytic power of the blood, and that recurrence will take place if this phagocytic power is reduced. He says, "The vaccine therapy of this disease is established in the fact that the disease is an infection in the deeper layers of the perianal skin and due to a specific organism, the streptococcus fecalis." He reports thirty-nine cases with twenty-seven cures by vaccine therapy.

Montague, of New York, read a paper at a recent meeting of the American Proctologic Society on Vaccines in the Treatment of Pruritus Ani, in which he says that bacterial infection in a pruritic area is likely to occur in all cases. The reason that it does not occur in all cases is due to resistance of normal skin and mucosa to invasion, or to the efficacy of the immune powers of the body cells and plasma fluid to resist such invasion.

The diagnosis of this condition is as easy as its etiology is obscure. The patient comes to the physician complaining of itching around the anus, more severe at night, not relieved, but usually increased by scratching. The patient sometimes gets periods of freedom from the irritation. In cases of long standing the skin around the anus is discolored, and cracked, loses its elasticity, and becomes leathery. Small areas are usually denuded of epithelium by scratching.

All patients suffering from pruritus ani should be given a general as well as a local examination. If the cause can be determined treatment should be directed to removing it. If a constitutional disease exists it should be treated while local treatment is instituted. All local pathology, such as ulcers, fissures, and hemorrhoids, should receive attention. Diseases of the skin should be treated, parasites removed, and the diet, clothing, and the general hygiene supervised. In the presence of local infection an autogenous vaccine should be made, and large doses administered to the patient.

Almost every drug in the pharmacopœia has been used in the treatment of pruritus ani. An excellent palliative measure is the use of green soap locally to clean the region, followed by the application of dilute alcohol. Compresses or enemata of water as hot as can be borne sometimes give temporary relief. Dilatation of the sphincter, the Paquelin cautery, and curetting the parts have met with indifferent success.

Jerome M. Lynch (3) cites a case of pruritus ani of long standing, in which every conceivable remedy had been tried with very little encouragement, but which was cured by x ray treatments.

Rolfe (4) says that he has had great success in the treatment of pruritus ani with ionic medication using a two per cent. solution of zinc chloride.

Where every means of relief has failed we have recourse to surgery. J. P. Lockhart Mummery (5) says that when the itching was of recent origin the removal of the cause was followed by prompt and permanent relief of irritation. In cases of long standing, however, and in severe cases of pruritus ani an actual disease of the nerve endings in the skin existed. This change was realized first by Sir Charles Ball, who had insisted on the fact that a definite nerve lesión was the underlying cause in such cases.

Sir Charles Ball has devised an operation, which he does under general anesthesia, but which may be done under local, in which he divides all the sensory nerve filaments supplying the skin surrounding the anus. This operation by dividing all the sensory branches supplying the skin of this area renders this region superficially anesthetic, and relieves all itching. Though there may be a recurrence of the itching it is not likely to occur for two or three years.

The modified technic of Ball's operation as done under local anesthesia is as follows: The patient is given a hyperdermic injection of morphine sulphate one quarter grain and hyoscine one one hundred and fiftieth grain, and is placed on his left side with his knees and thighs flexed. The area surrounding the anus is cleansed, shaved, and sterilized. At two points about one-eighth of one per cent. betaeucaine lactate is injected, taking in an area extending to the anterior and to the posterior midlines. A blunt pointed dissecting scissors is introduced through small incisions made at the points of injection, and the skin dissected mesially and to the raphés anteriorly and posteriorly. The bleeding is controlled by pressure. The wound heals in two or three days. The patient is kept on an absorbable liquid diet, and the bowels are opened with an enema on the fourth day. Where the results of the operation are not satisfactory some of the sensory nerves have been missed in dissecting.

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Nitritoid Crises Following Bismuth Injections.—C. Simon (*Bulletin Médical,* September 24 and 27, 1924) calls attention to the fact that even intramuscular injections of an insoluble bismuth salt may give rise to nitritoid crises similar to those following intravenous injection of arsphenamine, with sudden flushing of the face, conjunctival congestion, general discomfort and a bounding pulse. None of his six cases, however, showed subsequent vomiting or syncopal pallor. The crises occurred immediately after properly performed intramuscular injections, with all customary precautions taken to obviate entrance of the drug into a vein. In no case did the crisis follow the initial injection of bismuth.

The Treatment of Acne by the Combined Use of the X Ray and the Mercury Quartz Light

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The object of this paper is to present a method of treating acne vulgaris, which in my hands has given most gratifying results.

General hygienic measures, such as diet, the correction of constipation, and pelvic abnormalities, must of course be taken care of, as in every other method. The patient is given directions as to diet with an instruction sheet and list of foods. He is directed to check off on the food list the various items eaten during the course of the week. On the next visit this diet list is reviewed with the patient, and errors in selection are corrected.

General instructions.—Eat no sweets or fried or greasy foods; eat slowly and at regular intervals; avoid eating when fatigued or in a nervous condition; eat freely of laxative foods, especially bran; drink plenty of water between meals; do a number of bending exercises every night and morning to strengthen the abdominal muscles; establish regularity in living habits.

Special instruction.—Mineral oil, with or without agar agar in tablespoonful doses three times a day before meals in those cases where constipation is apparently a factor. This is discontinued as soon as possible. Bacillus acidophilus milk or tablets are of value in obstinate cases. The face is to be thoroughly washed with soap and lukewarm water, using a rubber sponge and tincture of green soap, at least twice a day, rinsing with ice cold water. Never use hot water.

At the first visit the patient's attention should be called to any scarring or pitting that may be present, as this is often overlooked in the presence of more conspicuous pustules and comedones. On the disappearance of the latter in the course of the treatment, the scars become correspondingly more noticeable, since the lesions present at the beginning have increased their number. Although the irradiation is not responsible for the scarring it occasionally seems to make it more pronounced, which perhaps may be accounted for by the alteration in the skin of gland function and the reproductive ability of the follicular epidermis. The patient should be warned of the possibility of a temporary pigmentation which may occasionally persist for some months. In blonds this manifests itself in the form of freckles, whereas in brunettes it is usually more diffuse.

The very mild cases of acne are not usually treated with the x rays. It has been my routine to select only the more severe and obstinate ones, assuming that in these the x ray is unquestionably the method of choice. The patient is advised that a number of treatments at weekly intervals will be required and that it is useless to begin with the idea of "trying a few treatments to see if any improvement takes place." Flareups occurring during the first few weeks of x ray treatment are not uncommon. In some cases no improvement is noted until the patient has been irradiated eight or more times. Progress during this interval is generally facilitated by the removal of the comedones and opening and drainage of the pustules and abscesses present. If carefully and regularly done this minimizes the scarring and fewer lesions are present after each visit much to the patient's satisfaction.

I have considered the patient to have sufficient x ray treatment when all the lesions have disappeared and no new ones have been noted for a period of about two to three weeks. In other words, the patient is given two or three additional treatments to insure a more permanent result. The routine course consists of twelve to twenty exposures at weekly intervals, the average being fifteen. The dose is one eighth skin unit centre and one quarter skin unit on each side (Witherbee and Remer (1) unit) using the factors 3 mil. 6 in. spark gap, 8 in. dist. 15″-30″ time respectively.

One week after the last x ray exposure the patient is given a prolonged exposure with a mercury quartz light. Any mercury quartz light—Alpine sun, Burdick or Kromayer light—may be used for this purpose and they will be referred to as the mercury light. Sufficient dose is given to produce what would correspond to a second degree reaction from the sun, and daily applications of boric acid solution are advised. Two weeks are allowed to elapse and this exposure is repeated. If there is any scarring or any evidence of a dry or wrinkled skin, or pigmentation, a third mercury light treatment is given from two to four weeks after the second. It is essential to peel the skin thoroughly. In mild cases of acne, the mercury light used in conjunction with the x ray or lotions is often extremely successful. But in the more severe cases the mercury light is used at the conclusion of the x ray course to peel the dry and wrinkled skin and to flatten out and efface the scarring.

This may also do away with any possible future untoward x ray sequelæ. Its value to prevent x ray burns has already been recognized (Sampson (2). If employed directly before x ray treatment is begun or during a course of treatment, a decided tanning occasionally becomes apparent. However, in spite of this, if there are great numbers of superficial comedones the treatment may be shortened by giving a mercury light peeling in the midst of the x ray course, remembering the temporary pigmentation which may ensue. If any mild superficial pustulation occurs on the new, tender and susceptible skin (post desquamation), this may be controlled with a boric acid wet dressing or a mild lotio alba.

As intimated, in mild cases the x ray and mercury light have been used alternately as follows: one quarter skin unit at the first visit; the next week a mercury light exposure of just sufficient dosage to produce a very faint erythema. The following week the quarter unit x ray is repeated and so these two therapeutic agents are alternated to the completion

of the course. This usually averages twelve x ray treatments or less. The slight disadvantage of this procedure is that the length of the total series is almost doubled.

One hundred and thirty-four patients were treated with x ray alone between July 1, 1922, to July 1, 1923. Ninety-nine of these patients were given over ten treatments, whereas the remaining thirty-five received less than ten. Undoubtedly only a small number, if any of those in the latter group were improved or cured.

A small number of patients in the former group of cases who had excessive numbers of comedones and pustules were not greatly improved by the time the fifteenth dose was reached and consequently discontinued treatment. However, the majority of the cases in this group were discharged cured. An effort is now being made to get late figures on the outcome of these and previously treated cases with a view to tabulating comparative results of x ray cases and those treated by the combined method as above outlined.

During the same period thirty-six patients were treated by the x ray mercury light and the removal of blackheads. But one patient so managed has had any return of acne to date and in this case only twelve x ray doses were given. The average number of x ray exposures required in cases treated by the combined method has been considerably less than in those where the x ray alone was employed.

SUMMARY AND CONCLUSIONS

X ray treatment, which is the conceded method of choice in the more severe cases of acne, is advantageously supplemented by the regular and careful removal of all comedones and the drainage of all deep pustules and abscesses. This greatly reduces the amout of scarring which would otherwise result were the x rays employed alone. The artificial sunburn following the course reduces greatly that scarring which is unavoidably present, peels off the dry and wrinkled skin, effaces any pigmentation, and probably lessens the danger of any x ray sequelæ. A patient so treated and examined later shows no sign of ever having had x ray treatments. By alternating one quarter unit x ray with mercury light treatments at weekly intervals all danger of a radio dermatitis is eliminated and the end result is most gratifying.

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Parasitic Eczema

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In years past eczema of a type resistant to the ordinary treatment for eczema, and occurring most commonly on the hands and feet, was looked upon as being probably caused by an infectious organism and was therefore called parasitic eczema.

Hebra in 1860 first called attention to the fact that the disease called eczema marginatum was caused by a form of tinea. In 1892 Mouktar described the disease as it occurred on the hands and feet, and it was again described in 1908 by Whitfield. In 1910 Sabouraud demonstrated that the organism producing eczema marginatum was the same as that producing parasitic eczema on the hands and feet. In 1916, Mitchell and Ormsby reviewed the literature, described the clinical types of the disorder and published the results of cultures obtained from seventeen cases, identifying the Epidermophyton inguinale. In 1921, Mitchell of Chicago again published a report of further cultural studies of the Epidermophyton inguinale in which the organism was recovered from a number of cases: he also describes a white organism growing in pure cultures from specimens taken from some of his patients, but which he was unable to identify. This same organism had previously been grown and the cultural characteristics described by Kauffmann-Wolff who also had been unable to identify it.

Clinically there are several types of the disease. Tinea cruris, or eczema marginatum, as we usually see it, involves the perineum and the adjacent part of the thighs, being bilateral due to the apposition of the opposing surfaces; in long standing cases the lesion may extend upward onto the pubic region, outward on the groins and downward along the inner part of the thighs toward the knees; occasionally a single patch may be found on the inner aspect of either thigh. The lesions have sharply demarcated borders, the inflammation not gradually shading off into the surrounding skin but ending abruptly. The advancing border is raised, is slightly scaly and usually of a deep red color; the central portion may have the same deep red color or may be of a lighter shade. It is increased by heat and moisture which are commonly present in those parts of the body affected, that is, where skin surfaces are apposed, as the perineal region, the axillæ and under the breasts of women; it is also sometimes found on the buttocks, and about the umbilicus. Subjective sensations are itching or burning.

On the hands and feet the most common type of epidermophytosis we see is a chronic circumscribed patch or patches of eczemalike eruption, more or less red, studded with vesicles of various sizes which are comparatively superficial, some desquamation, but, in contradistinction to simple eczema, having a sharply defined border; the inflammation does not shade off into the surrounding skin. It usually begins as a small, inflamed, and vesicular spot, the

vesicles rupture, become dry, and desquamation takes place at the site of the vesicles, while new vesicles arise at the margins of the patch; as the lesion extends fresh crops of vesicles keep on forming in the area previously affected. It is usually found on the backs of the hands and along the fingers but it also occurs on the palms, on the forearms and may occur on other parts of the glabrous skin, but always in circumscribed patches; there may be only a single patch but usually there are two or more patches of various sizes.

On the feet the lesions may be similar to those found on the hands, but more often it is confined to the toes, chiefly affecting the third and fourth interspaces and the contiguous parts of the dorsal and plantar surfaces; here, due to the approximation of the toes, the epithelium is often found in a macerated and sodden condition, and in places the skin is denuded of its epithelial layer; these denuded areas are of an inflammatory red color and appear shiny and dry, while at the border of the lesion small superficial vesicles may be seen. Fissures may also be present. On the plantar surface, due to the thicker horny layer, the vesicles appear more deeply seated and do not rupture as quickly as when situated in the softer skin, but when ruptured, dry quickly. Some vesicles do not rupture but seem to become absorbed and leave a small brownish dot which is followed by desquamation; scaly patches are thus formed in which new vesicles arise; at or beyond the border vesicles also develop causing an extension of the process. Mouktar, in his report published in 1892, described a case in which there was present only an excessive amount of callus on the soles, from which he had recovered the tinea fungus. On the dorsal surface of the foot and on the legs the lesions resemble those found on the hands and forearms.

In tabulating a series of 238 cases that were clinically epidermophytosis 118 cases occurred in males and 120 in females, showing that the disease is equally prevalent in both sexes. The age ranged from two to sixty-three years with the majority of cases occurring between eighteen to thirty-five years. This shows that age is not a factor; it occurs at almost all ages. Occupation seems to play an important rôle in the incidence of the disease, by far the greatest number of cases occurring in those who find it necessary to use water to a great extent in their work. When one remembers that the organism or fungus thrives in the presence of heat and moisture one can easily understand why this is so. The following is a list of percentage of the occupations:

Occupation	*Percentage*
Housework	37
Restaurant workers (including cooks, dishwashers, waiters and waitresses)	14
Clerk, tailors, barbers, each	5
Operators	5
Laborers, cutters, each	3
Pedlar, stenographer, watchman, porter, student, dressmaker, storekeeper, each	2
Cigarmaker, ironworker, embroidery, showcases, sailor, elevator man, electrician, orderly, sheetmetal worker, each	1

This shows that over fifty per cent. of the cases occur in persons compelled by their occupation to use water extensively, while twelve per cent. of the remainder, that is, the tailors and barbers, also use considerable water in the course of their work. Locations of the lesions would also indicate that the occupation is a predisposing factor in the locations affected:

Location	*Percentage*
Both hands	39
One hand	15
Toes	13
Fingers	11
One foot	5
Both feet	3
Forearms and thighs	3
One forearm	5
Hands and arms	2
Both hands and feet	1
Feet and knees	1
Fingers and toes	1
Scrotum	1

When we come to analyze this, we find that seventy-seven per cent. of the patients had lesions on the hands and forearms, that is, infection of that part of the body most exposed to traumatism and infection by reason of manual labor. We also find that in twenty-six per cent. the infection was unilateral: while this percentage may seem high in an infectious skin disease where there is every opportunity for autoinoculation to take place through daily contact, many patients give a history of the lesion appearing first on one side, and then some time later appearing on the other: we must assume, therefore, that in many of the unilateral cases sufficient time had not yet elapsed for autoinoculation to take place. Mitchell, in his paper in 1921, cites an instance of conjugal infection in which a recently married man brought his bride for examination for a condition of the hands and feet which had arisen shortly after marriage, and which he feared he might contract. Examination of the husband showed the typical maceration and fissures about the toes of long standing, and on being questioned he recalled having had eczema marginatum during his college days.

Beside personal contact, the disease may be transmitted through the use of improperly laundered towels in public baths, or walking barefoot in such places, as the infective organism may be deposited on the floors or on towels by persons already infected. It may be transmitted from one member of a family to the others by the same means, or by wearing the slippers of an infected relative.

The cases of tinea cruris or eczema marginatum that occurred during the same period as the epidermophytosis were not included in the list before mentioned: there were only nine cases showing it to be of comparatively infrequent occurrence as compared with infection of the extremities. There were eight males and one female; this preponderance in males I believe is due to the fact that many men are accustomed to wearing heavy woolen undergarments which cause more or less perspiration of the crural region and so produce favorable conditions for the growth of the organism. The ages ranged between twenty-six and sixty years, none occurring in children. Occupation did not seem to be an important factor; while no two had the same occupation, the majority were men more or less with outdoor occupations and therefore accustomed to dressing warmly; yet from these few cases one is not justified in drawing conclusions:

Location	Percentage
Scrotum and thighs	2
Both thighs	2
Scrotum and crural region	1
Scrotum alone	1
Thighs and buttocks	1
Thigh, one only	2

In only two of the nine cases the thighs were not affected. The duration ranged from one week in an acute case to three years in a chronic one.

TREATMENT

At the present time much reliance is placed in Whitfield's ointment which is composed of salicylic and benzoic acids in an ointment base; if used in sufficient strength, the epidermis is exfoliated by the salicylic acids when both acids act as fungicides. This ointment usually produces beneficial results but is not always curative.

In the cases which are very resistant to treatment repeated exposures to fractional doses of x rays usually bring about a cure.

Other remedies that have been found to be useful are chrysarobin in ointment up to ten per cent., and a saturated solution of silver nitrate in alcohol or sweet spirit of nitre.

320 Grand Avenue.

Rhus Dermatitis: Its Treatment With Poison Ivy Extract*

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Everyone is to some degree susceptible to poison ivy. However, there seems to be little foundation for the statement that rhus dermatitis may develop in persons who merely walk past the plant. Actual contact with the resinous sap of the plant is necessary to produce rhus dermatitis, but this contact may be brought about through an intermediary agent which carries the sap, such as particles of soot in smoke from the burning plants, as well as clothing long after contact with the plant.

The work of Strickler established a scientific basis for the treatment of rhus dermatitis by injection of poison ivy extracts. Several workers have obtained clinical cures with his alcoholic extract when injected intramuscularly, but many patients have complained that injection of the extract caused severe pain. Undoubtedly, this pain was due to the high percentage of alcohol used to hold the active principle in solution.

ALMOND OIL EXTRACT

Our laboratory studies, which have been carried out during the past three years on the subject of poison ivy (rhus toxicodendron), have included the problem of supplying the active principle in correct therapeutic doses in a solution that would permit of its being injected without the pain caused by the alcohol. As a result of these investigations, a solution of the purified active principle in almond oil has been prepared.

LABORATORY TESTS

Repeated tests of this product on laboratory animals have shown it to be nontoxic, and clinical trials have demonstrated its efficiency. This extract possesses the advantage of being nonirritating and its injection, therefore, does not cause severe reactions or pain. Moreover, since the oil is slowly absorbed from the tissues, a larger amount of the active principle can be used in each dose. Immunological tests indicate that this almond oil extract is more potent than any extract of poison ivy that has thus far been prepared.

*Read at the joint meeting of the Bergen County, N. J., and Rockland County, N. Y., Medical Societies, held at Pearl River, N. Y., May 20, 1925.

CAUTION

Care should be exercised when injecting the almond oil extract of poison ivy for, if the extract is inadvertently dropped on the skin, it may cause typical rhus dermatitis. In order to guard against this possibility and, at the same time, to relieve the physician of the necessity for cleaning his own syringe, the almond oil extract is furnished in syringes which may be destroyed after use. When stored in a cool place, the oily base becomes more viscid, thus making it difficult to inject the extract through the needle. For this reason it is important to warm the extract (not above body temperature) before using.

DOSE AND ADMINISTRATION

As a rule one injection of one c. c. of the almond oil extract will be found to give relief. In severe cases two or three doses may be required at intervals of twenty-four hours. Usually the subjective symptoms of itching are relieved in twelve to twenty-four hours after the first dose, and local reactions are absent. When administering the almond oil extract it is important to make all injections intramuscularly and not subcutaneously. The best location for the injection is in the deltoid muscle, just below the point of the shoulder.

Some three hundred drugs and chemicals have been studied as local remedies for ivy poisoning, and it has been suggested that it would prove beneficial to remove that portion of the poison that has not penetrated or combined with the skin by the use of a solvent and precipitant combined, such as two per cent. alcoholic solution of lead acetate. However, any local treatment is relatively ineffective when compared with the results that have been obtained by the intramuscular injection of the almond oil extract of poison ivy.

CLINICAL REPORTS

In order to demonstrate the practical value of this extract I shall present excerpts from two or three clinical reports received from various parts of the country.

New York: "Prompt and complete cessation of

itching within six to twelve hours after the administration of the first dose."

New Jersey: "Face and hands involved. Two doses given. No improvement after first dose, but condition was arrested. Improvement prompt after second dose. No local reaction occurred from either dose. This case was one of extreme susceptibility to poison ivy. Last year the patient was given three injections of a poison ivy extract in alcoholic solution for treatment. Was benefited at that time, but painful local reactions followed and patient did not want injections this year until assured that injections of poison ivy extract in almond oil would not cause so severe pain. Patient was very much pleased with contrast in local reactions of injections."

Virginia: "Two doses given. Improvement followed first dose. No local reaction. Patient entirely satisfied and relieved."

Alabama: "I will say that I find the poison ivy extract in almond oil far less irritating than the antigen preparation (alcoholic extract) which has heretofore been used, and have found your preparation to come up to the fullest expectations. In each case I have stated to the patient that within twenty-four hours after first dose they could notice that the itching, etc., would stop, though the course would be from two to three doses twenty-four hours apart. They have voluntarily stated that the first dose acted as specifically as stated to them."

SUMMARY AND CONCLUSIONS

The important points which I think warrant emphasis are as follows:

1. All persons are susceptible in some degree to poison ivy.
2. Actual contact with the sap of the plant is necessary to produce rhus dermatitis, but such contact may result through some intermediary agent which carries the sap.
3. Alcoholic extracts of poison ivy cause painful local reactions, which are undoubtedly due to the high percentage of alcohol used to hold the active principle in solution.
4. Poison ivy extract in almond oil contains the purified active principle of rhus toxicodendron, freed from coloring matter and inert water soluble substances.
5. Laboratory tests have shown that the almond oil extract is nontoxic and more potent than any other extract of poison ivy thus far prepared.
6. Poison ivy extract in almond oil can be injected without pain or local reaction. It should be administered intramuscularly, preferably in the deltoid muscle just below the point of the shoulder.
7. Clinical reports from several states indicate that prompt relief usually follows in twelve to twenty-four hours after the first dose of poison ivy extract in almond oil. Severe cases require two or three doses.

Causes of Severe Syphilitic Lesions

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Every syphilologist of experience meets patients in whom treatment for syphilis appears to be ineffective. The unfavorable results are of several types, some fairly common, others less so and some quite rare. From a large amount of clinical material I have, during the past year, separated groups which give clinically different types of unfavorable results. This paper is a study of some of the causes of these results. It also considers any modification of treatment the study suggests.

Types of unfavorable results encountered were: Persistence of lesions in spite of treatment; recurrence of lesions in spite of treatment; phenomena of increased severity following treatment; appearance of precocious lesions, usually in patients that had been treated energetically; occurrence of destructive lesions in spite of energetic treatment.

To understand the reasons for these untoward effects it is necessary, first, to review some of the pathological changes produced in the body by the spirochetal infection—the reaction between the spirochetes and their products and the tissue cells as far as they are known; also the modifications of these produced by treatment. The known facts may then be used as guide posts to a further study of the subject; and one may attempt to fill any hiatuses left to a complete understanding of the process of damage and healing with reactions familiar in medicine which will dovetail into these hiatuses.

The reaction of the tissues to the Spirochæta pallida is multiple and may be divided into specific and nonspecific. The specific reactions include production of antibody, which presumably gives the Wassermann reaction; the nonspecific reactions include production of the lesions and their healing.

The antibody of syphilis is produced when and where the reacting cells are exposed to irritation by the spirochetal endotoxin. A proof of this is that serum taken from the chancre gives positive serological findings early, while the blood is still negative. That the production of this antibody is due to the toxin rather than to the spirochete itself is proved by the provocative test. This test consists of the administration of a strong spirochetecide. If spirochetes are present in the body they are destroyed, their endotoxin is liberated and a previously negative Wassermann reaction is changed to a positive one.

It seems that the specific antibody is thrown into the blood at its point of production and quickly becomes diluted. The tests known to us at present show the presence of this substance only when above a certain concentration; so that we may have a good local reaction, as at the chancre or other active lesion, yet have a negative Wassermann.

The phenomena of increased severity is a condition where lesions of unusual severity occur in syphilis and is admittedly due to improper treatment.

It was and is yet quite commonly alleged to be due to "inadequate intensive treatment, and that a few doses of arsphenamine, without continued treatment, may result in more severe manifestations than if milder therapy had been applied" (1).

I wish to point out here that this opinion is erroneous; that the increased severity of the lesions is not due to too few injections of arsphenamine but to too many for that particular patient.

I quoted from a previous article (2). "The explanation given (for the appearance of the phenomena of increased severity) is that the arsphemanine destroys the spirochetes so rapidly that there is no time for the tissues to become acclimatized to the irritation by the germs; and a small focus of spirochetes tucked away safely from the action of the arsenic, somewhere in the tissues, develops in the susceptible host with great rapidity and severity—I repeat, this occurs because "the tissues have not become acclimatized to the germs."

That this reasoning is unsatisfactory is seen at once when we consider that the body was certainly unacclimatized to the spirochetes before the infection; so that increased severity necessarily means that the resistance is less in that patient than in one who had not been treated with arsphenamine; that the resistance has been lowered; that the antibody producing cells or tissues (and other resisting cells) have been damaged. This to me seems selfevident and needs no further proof.

In order to understand the reason for the persistence of lesions beyond the normal, for exceptionally severe lesions, for precocious lesions, etc., we must study the normal mechanism of lesion production in syphilis.

Why does the chancre show marked differences from later lesions? and why do secondary lesions show gross differences from the tertiary though microscopically similar?

What different conditions obtain in the body when the chancre is formed from those present when the secondaries appear? When the chancre is developing there is no general systemic reaction, no positive Wassermann. The chancre is the local reaction to the presence of the spirochetes; the struggle between the irritants and the defending cells is a prolonged one and a comparatively large, massive infiltration results. The secondary lesions are, as a rule, smaller and slighter; here have been no such well matched antagonists as at the production of the primary sore. Why? We can easily imagine that specific antibody which has been formed in the meantime, plays a part antagonistic to the organisms so that a lesser local reaction is sufficient to destroy or control them here than is needed in the chancre.

If we were asked to give in a few words the outstanding differences between the individual secondary and tertiary lesions, we would say the tertiary lesions are larger though they contain few spirochetes. Why this difference? A study of certain characteristics of the delayed roseola may help to a solution of the problem.

The delayed roseola is distinguished from the ordinary roseola in this wise. Here and there a macule is found with a border that is sharply defined, instead of gradually fading into the healthy skin. What is the reason for this sharp margin?

If these lesions were produced by the destruction of the tissue cells as a result of the presence of the spirochetes we would say that the resistance of the cells is great, greater in the delayed roseola than is usual, and this resistance is finally overcome by the great mass of spirochetes in the centre of their camp, while the lesser number of organisms on the outskirts are successfully resisted; so that the lesser reaction seen at the border of the ordinary macule is missing. We know, however, that the contrary is true; it is liberation of endotoxin due to destruction of the spirochetes that produces the lesions. This is shown, in an exaggerated form, by the Herxheimer reaction.

We thus see that while a more or less thickly grouped mass of spirochetes are destroyed by the defending cells, spirochetes in a lesser concentration are not. Evidently a lack of attraction (perhaps due to a low content of specific opsonins) exists. The theoretical negative chemotaxis between phagocytic cells and microorganisms which was once taught would have explained this phenomenon well.

This lack of attraction, whatever the cause, is unduly prolonged in the delayed roseola and is finally overcome at a high threshold. The fewer organisms at the periphery of the camp of spirochetes are not destroyed and the usual areola at the border of the macule is missing.

The question rises here, why do not all the macules of the delayed roseola show the same characteristics? Perhaps the slight increase of endotoxin produced at the sharply defined macules results in an increase of antibody, sufficient to help overcome the resistance between the tissue cells and the spirochetes; perhaps, in most of the macules, the destruction of the spirochetes in the centre of the camp is accompanied by an overflow of endotoxins into the tissue about it, and the irritation by this, either by stimulating the tissue cells or weakening the spirochetes or both is sufficient to overcome the lack of attraction between the tissue cells and the spirochetes.

In the animal economy stimulation of a function by any substance can be carried to a point beyond which depression sets in; and with continued dosing with the drug or toxin the depression becomes intense. In syphilis the lack of attraction between the tissue cells and the spirochetes is first intensified then lessened and abolished, and where the presence of many spirochetes resulted formerly in slight lesions, a few now produce severe ones.

I say the lack of attraction is first intensified for the following reason. In presalvarsan days a common form of treatment, the administration of mercury by the mouth, was often insufficient to prevent the appearance of the roseola but was effective in delaying it.

In the average case of syphilis the increased susceptibility of the tissue cells appears late. In exceptional instances this appears sooner, whether from an unusually virulent infection or an unusual sensitiveness of the resisting cells.

With exhibition of medication that intensifies these actions though still insufficient to destroy all the spirochetes, the normal processes are exaggerated. And when the medication is carried beyond the optimum for the particular patient we get first, persistance or recurrence of the lesions; at a more ad-

vanced stage of overstimulation, the phenomena of increased severity; and at a still more advanced stage, precocious lesions.

We know of three actions of antiluetic remedies: 1, Absorption of syphilitic infiltration; 2, spirocheticidal action; 3, action on production of antibody.

We know from of old that potassium iodide is effective in the absorption of syphilitic granuloma, though its mode of action is still somewhat doubtful. As a spirochetecide it is of little if any value (3).

We may therefore expect potassium iodide to relieve such symptoms and signs as are caused by the presence (mechanically) of luetic infiltration. It may aid spirocheticidal action by uncovering such of the organisms as are buried in the luetic infiltrate. To expect relief of symptoms due to the syphilitic infiltration is therefore logical, to hope for a reversal of a positive Wassermann by administration of iodides is not, and clinical results bear this out.

We know, clinically, that arsphenamine is also very active in causing absorption of syphilitic granulation tissue. And this is not due, merely, to destruction of spirochetes because the tertiary lesions contain but few of these organisms, yet they respond to the arsenic well.

Arsphenamine and mercury, as well as bismuth, are spirocheticides. In what form these drugs act is uncertain. Arsphenamine will destroy the spirochetes in a test tube in a solution of one to one thousand; when the arsenic is digested with protein it is thirty to forty times as powerful (3). That one injection of arsphenamine as a rule destroys the spirochetes in active lesions is readily seen by examining juice squeezed from the chancre before the injection and the day after. Mercury is also spirocheticidal, but much less so than the arsenic, and bismuth seems to come in somewhere between the two.

In time, the spirocheticidal action of the drugs becomes weakened *in vitro* and *in vivo*. Akatsu and Noguchi showed that the Spirochæta pallida increase in tolerance to salvarsan five and a half times in three to four months in the test tube, and to bichloride, thirty-five to seventy times (4).

We have seen that antibody is produced in response to irritation by the spirochetal endotoxins. The clinical significance of the presence or absence of a positive Wassermann reaction in the syphilitic at different times is more difficult to explain. We know: 1, That spirocheticides injected into nonluetics will not produce antibody (a positive Wassermann); 2, the use of spirocheticides continued in a person after he is cured of syphilis will not keep the Wassermann reaction positive; 3, the Wassermann reaction may continue negative for a long period and then active symptoms reappear with a positive Wassermann; 4, it is common knowledge that the Wassermann reaction is sometimes negative though the patient presents active lesions, like a florid syphilide.

The explanation for the appearance of the untoward lesions and the variations in the Wassermann reaction becomes simple when we consider the numerous factors that may enter into the picture complex of syphilis at any one time. These factors (which have been analyzed above) include a, the local reaction between the tissues and the spirochetes; b, those connected with the production of antibody; c, the reaction to the drugs used.

The spirochetes may attack at one time any part or parts of the body; different tissues or groups of tissues are attacked at different times; some tissues are attacked more than once. We must expect that the different types of cells react differently to the spirochetes and to their toxins; and that the resistance of each tissue varies with succeeding attacks. Pearce and Brown have proposed two laws bearing on this matter.

It is safe to assume that the different antibody forming cells are no more uniform in their powers than the different tissues are in their susceptibility to the syphilitic infection; and some are exhausted sooner than others.

We know that the phenomena of increased severity are less apt to appear when mercury is given after the arsphenamine. This shows that the different drugs, arsenic, mercury and no doubt bismuth, each acts differently on the immunity building and the local reacting tissues. It is also quite likely that a type of tissue stimulated strongly by one drug is acted on weakly or perhaps not at all by another.

We can now readily understand how, in certain instances, a florid syphilis is present while the systemic reaction has not as yet progressed to the stage of a positive Wassermann reaction. Here an injection of arsphenamine promptly destroys many spirochetes, a large amount of endotoxin is liberated and thrown into the circulation, the antibody production is stimulated and we get a positive reaction.

Lesions of increased severity mean that the tissues forming the sites of these lesions have been overstimulated. If, at the same time, a large part of the antibody producing cells is in a state of stimulation against the toxins, the Wassermann is positive; if in a state of overstimulation, it is negative.

When the reaction of the tissues to the disease gets beyond a certain point, we must expect that while some tissues may still be stimulated to favorable reaction, others will be distinctly injured by continuance of the same treatment.

The lesson that all this teaches is that the syphilitic patient is not a "case of syphilis" to be treated nor even "a patient with syphilis." He is a human organism who, aside for his mental and emotional characteristics, has a number of organs and tissues, each with certain physiological functions. That these organs and tissues are of different and differing powers of resistance; that they are attacked at different times, many, a varying number of times by the spirochetes and their toxins. With treatment the problem is further complicated by the different actions of the drugs on the different tissues. And when one tissue reacts badly to any drug or measure, even though the rest of the body responds well, that drug or measure must be discontinued or its administration modified.

The syphilologist should hold it as a law in medicine, that with the administration of antisyphilitic treatment, the patient's general health must be looked after. In obstinate or severe cases this may mean the difference between favorable and disastrous results. We see patients in whom persistent and intensive treatment fails to stay the progress of destructive lesions who respond promptly and well to tonic treatment when that is indicated or to care for the gastrointestinal tract and other organs.

The method used by our fathers of stopping all antisyphilitic treatment in patients who were not doing well on such medication and putting them for some time on a tonic laxative preparation like the old Zittman decoction could be used to advantage today in many cases.

SUMMARY

1. In the early stages of syphilis the reaction between the Spirochæta pallida and the defending tissue cells is lack of attraction. With the efforts of Nature to cure the disease and with treatment, this action is first stimulated, then lessened and then abolished. Therefore, while early in the disease many spirochetes produce mild lesions, in the later stages few of the organisms produce severe lesions.

2. Different tissues have different powers of resistance to the syphilitic infection. The resistance of some tissues may have been diminished or overcome while the rest of the body reacts well.

3. Tissues are unequally susceptible to a drug. A dose which acts well on one kind of tissue cell may be too large for another and insufficient for a third.

4. For these reasons a change in the treatment is indicated when any tissue or organ reacts badly to the treatment that is administered.

5. It should be a law in medicine that with the antisyphilitic treatment the general health of the patient should receive proper attention. If in spite of such care and medication the patient does not do well, it is advisable to stop all antisyphilitic remedies for a time, while tonic and symptomatic treatment is given.

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Bismuth in Treatment of Syphilis

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The spirocheticide properties of bismuth were only established incontestably in 1921 by Sazerac and Levaditi in experiments on animals. Subsequent extensive clinical trials, which have been recorded in numerous articles, soon proved that this discovery was of considerable therapeutic value. Today there is no longer any doubt that the bismuth compounds are a useful adjunct in the treatment of syphilis. They prove useful above all when the organism cannot support the arsenicals or mercury, or when the disease resists these remedies. Besides this, on account of their low toxicity and more intensive action on the spirochetes and in the Wassermann reaction, they may with advantage take the place of mercury compounds in mixed antisyphilis treatments.

So far the bismuth preparations have generally been administered intramuscularly, in the form of insoluble compounds.

The experiments on animals have been chiefly made with soluble bismuth salts—tartrate of bismuth, ammonium tartrate of bismuth, lactate of bismuth (Robert and Sauton; Sazerac and Levaditi; Giemsa), which were injected both subcutaneously and intravenously. Besides these soluble salts, several other bismuth compounds have been reported in literature as, for instance, the bismuth compounds of pyrogallol, of phenol (Grenet and Drouin), bigallate and bioxyiodogallate (Sazerac and Levaditi), bisalicylate, subnitrate, and subcarbonate (Zollinger), the bismuth compounds of thioglycol acid and of thiourea (Ritz), colloidal bismuth and bismuth hydroxide (Zollinger, Fournier and Guenot, and others).

From a toxicological viewpoint, the following conclusions have been established: The toxicity of the bismuth salts depends on the ionizable bismuth: it is greater by intravenous than by subcutaneous injection. Subcutaneously injected bismuth compounds showed varying toxicity, according to the degree of solubility. Certain insoluble bismuth compounds are only very slowly reabsorbed after subcutaneous injection, and form deposits, which on occasion can bring about a sudden bismuth poisoning (Wolfer). Parenterally administered bismuth is for the greater part eliminated in the urine, and only in very small quantities in the stool. It has also been detected in other secretions—gall, saliva, cerebrospinal fluid, and so on (Zollinger, Benech). Elimination of bismuth is slow, especially when preparations which dissolve with difficulty have been administered by subcutaneous injection. After intravenous injection the bismuth is eliminated more rapidly.

From a therapeutic viewpoint all bismuth salts proved to be effective, in proportion to their reabsorption, against poultry spirillose (Robert and Sauton), rabbit syphilis (Sazerac and Levaditi, Giemsa, Ritz). The specific effect on the spirochetes was prophylactic as well as curative in these instances. The results obtained with Nagana infected guinea-pigs are less definite (Sazerac and Levaditi).

The first clinical experiments following the experiments on animals, indicated that bismuth preparations would prove of value in the treatment of human syphilis. Since then the results of numerous investigations have confirmed this view. At the beginning, byeffects were noticed from the bismuth treatment (stomatitis, gingivitis, in a few cases slight albuminuria). As soon as sufficient data became available through systematic research on the use of the preparations and their dose, it was found that these byeffects could be either entirely avoided or at least reduced to a negligible degree.

In the treatment of syphilis with bismuth preparations given orally a few observations soon established the fact that therapeutic possibilities from this method of administration are remote. Treatment by intramuscular injection has proved so far to be the best: for this purpose fine oily suspensions of various bismuth compounds are being used. These preparations represent bismuth in an insoluble form, and when injected absorption takes place very slowly (Sazerac and Levaditi; Fournier and Guenot; Bernard; Emery and Morin; Bloch; Müller; Felke, and others).

Having followed with great interest the reports of various investigators published in foreign literature on the use of bismuth in the treatment of syphilis, we decided to conduct a series of experiments in our clinic. The experiments began in September, 1923. The bismuth preparation we selected for the purpose is an oleate of bismuth in a fine oily suspension, known as oleo-bi. Approximately eight hundred injections have been given to fifty-two patients. Out of this number we have been able to obtain complete records in twenty-seven cases. These patients have for the most part received neither mercury nor iodides, nor any of the arsenicals, in order to make our test of the value of bismuth as conclusive as possible.

In these twenty-seven cases the diagnosis had shown twenty-one secondaries (seventy-eight per cent.) and six latents (twenty-two per cent). Twelve injections were given for a course, at periods one week apart; one ampoul of two c. c. containing 0.10 gm. bismuth, was used for each dose.

Clinical results.—Serological tests at conclusion of the treatments showed negative Wassermann in fifteen (seventy-one per cent.) of the twenty-one secondary cases and in four (sixty-six per cent.) of the six latent cases. In the whole twenty-seven cases in which the treatment was completed there was thus obtained a negative Wassermann in nineteen cases (seventy per cent.).

Reactions.—A few patients complained of gastric disturbances which seemed to pass away within twenty-four hours. In three cases there were severe local reactions, which almost went on to suppuration. The gluteal muscle around the site of injection was swollen twice its normal size, the inflammation extending up over the anterior superior spine of the ilium and down under the gluteal fold. The effect of this form of bismuth on secondary eruptions was that they did not clear up rapidly and in several cases persisted for four or five weeks.

In regard to the effect of bismuth on local lesions, it was noticed that in the primary initial sore, the first two or three injections had very little effect on the size of the chancre. We therefore doubled our dose and each patient thereafter received four c. c. of the oleate of bismuth which was equivalent to thirty-two per cent. of bismuth. There was no noticeably disagreeable effect from the increased dose, but we did notice that the skin lesions, both primary and secondary, disappeared more rapidly. The effect of the injections given in the gluteal region was the same as when we used the two c. c. or single dose. At times there was a slight hyperemia around the area of the injection, and at times a small indurated mass could be felt which persisted for four or five days. We were never compelled to miss giving a treatment on account of local reaction.

Urine routine.—The heat test examination failed to reveal albuminuria.

SUMMARY

Summing up these observations it may be said that patients treated with bismuth did not respond as rapidly as those which were treated with the arsenicals. This result, however, was quite in line with our expectations, for there is nothing in the history of the use of bismuth in the treatment of syphilis which would lead one to expect that it can displace the arsenicals. Painful swellings were at times produced in the gluteal region but did not persist long enough to cause any interruption of treatments. The clinical results obtained in these twenty-seven with oleobi show that bismuth can be a useful adjunct in our attack on syphilis, especially where the patient is unable to withstand the administration of salvarsan or neosalvarsan. In order to avoid inflammation of the mucous membrane, careful mouth hygiene is recommended. It is best to suit the dose to individual conditions, in separate doses of 0.10 gm. of bismuth.

This first investigation of oleo-bi will be followed by further use of the preparation, it being our intention to investigate the value of the product in the treatment of cases in which the arsenicals are already being used with a view to ascertain its value in the treatment of neurosyphilis.

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Historical Medicine

Modern Medical Problems in Plato

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In Plato's *Republic* the medical man may find much to engage his attention in the hygiene and training, the regimen and the diet of the citizens. Pythagoras, so far as we know anything of this semi-mythical person, had in reality adopted the vegetarian diet which suited Mediterranean men not alone who dwelt in Egypt and Asia, where Pythagoras is said to have lived for years, but those along its northern coasts. With it were mixed various mystic taboos and the rigidity of a religious conformity which, if observed, allowed little variation for the varying constitutions of men. Plato doubtless had gathered the most of his lore largely from the Mediterranean people as to regimen and diet rather than exclusively from Pythagoras, to whom, however, much of his teachings have rightly been traced. Like Pythagoras, however, and dietitians generally, he seemed to think that if all men lived according to the menu of his republic there would not be much need of physicians. In this we get an echo of Egyptian Medicine in the Papyrus Ebers and in that of *IV Maladies* of the Hippocratic Corpus, which ascribed the etiology of all disease to the food. Like all dietitians, ancient and modern, he ignored the variability of the human species in the matter of food. The articles of diet which he had on his list were barley and wheat and olives and cheese and onions and peas and beans, figs, nuts and berries, quite a vegetarian bill of fare, and it is well to note that beans were not taboo as they were with Pythagoras. Where Socrates was going to get his cheese without cattle is not very clear, but he says that if in a state we must have herdsmen and the people must eat meat, then there will be a much greater need of physicians.

HYGIEIA AND ÆSCULAPIUS

Draught cattle, for agriculture, he seems to think necessary, but he sets his face against meat eating or admits it only under protest. Land for pasturage would then be coveted. We would have to take it from our neighbors. Meat and imperialism, fighting and doctoring and dying of disease when young instead of when old—these seem to be the calamities Plato means to escape in his republic, largely by diet, and in the Mediterranean lands few of us would have anything to say in cutting down meat in the diet to a minimum. He has a good deal to say against excesses of all kinds, especially athletics, against Syracusan dinners and Athenian confectioners and the complexities of license and luxury. When these multiply in a city halls of justice and doctors' offices are always opened and disease multiplies in the state, the doctors and lawyers "begin to give themselves airs, finding how keen is the interest freemen of a city take in them." High society has much concern with them. If the builders of Utopias did not thus drift into preaching, they could hardly find a reason for planning castles in Spain, but incidentally in the *Republic* we get thereby a glimpse of hygienic and social problems closely akin to our own.

Plato is here not alone alive to the causes of disease, as they were understood in his day, but as a statesman, though of the most theoretical and unsuccessful sort, he anticipated the theory of American doctrine in believing that if a republic is to survive, the greatest amount of moral and mental training should be exercised on those to become the governing classes. Plato's republic was essentially an oligarchy. Modern government, especially our own, is a democracy, in form at least, indeed essentially. The mass of men Plato excludes from the government, uneducated, we infer, and pushes into this class the outcasts from above, the incompetents, those who did not come true to type in his breeding pen. We admit them all to government and insist on instilling into all what Plato reserved for the chosen few, but we do insist on it for practically the same reasons. Those who govern must be as wise, as healthy, as moral as possible, and education thus becomes the most important function of the state. All forms of government, one changing into another, but all in history have, some sooner, some later, led to disaster, defeat and disintegration. An educated oligarchy, bred to govern, is gliding into a democracy in England and history, but not this generation, will know the result. As for us we desperately cling to the belief that universal education, to the limit, is our salvation, if there is to be any. It is the only thing which has not been tried, but Plato would have thought it queer doctrine and we are finding it hard to enforce, and we are discovering just as some kinds of food are not good for

some kinds of men, so some kinds of education are not good for some kinds of youth. We can carry the simile no further, for unlike the food we find some youth can take no education at all, or so little and so badly that they become, in spite of us, if not destructive to the state, a drag upon it.

Further, as an oligarch, Plato is with us modern democrats in insisting that not only the men but the women of the republic must be treated to the best of training, if they are to raise the best of sons for the citizenry. In Plato's day, too, men sat in clubs drinking cocktails and telling scabrous stories and pointing out "woman's place in the home"—so we can sum up in quite familiar language the old and the new retort. Socrates is made to say it is not worth while making much talk about weaving and the attention given to baking cookies and stirring the soup, or in arranging certain things for the goose and others for the gander. Many women are better than many men at many things.

"It is all just as you say."

"My friend, there is no occupation of those carrying on the work of the city for a woman because she is a woman or for a man because he is a man, but the gifts of nature are equally diffused in both sexes."

They differ of course just as men do. One has a gift for medicine or for music, or not. They may well become a part of the guardian influences of the city and there being no difference in their aptitude for this except as to their physical strength, he decides they shall strip and, with virtue as their robe, they shall take part in all the conflicts for the welfare of the nation, even military. In the gymnasiums they shall take their exercises naked like the men, though the world may laugh and jibe. It is easy enough to assign tasks of lighter muscular work and endurance to them, but their training should be the same.

Of course women do not go naked yet, but for the last hundred years, since the early Victorians, women have in general taken off a good deal of their clothes elsewhere than in the ball room and the bed room. In fact as athletes today they have fairly well approached the figleaf stage, if one is to judge from the Sunday papers. But Plato in other respects, too, is fairly abreast, despite his eugenic vagaries, with modern theory and practise. His theories at least are. It is for us to take note that he specifically refers to medicine as one of the arts in which women may excel. When we ponder over these passages in the *Republic* we can not but think of its author as isolated from the public sentiment of his time. Waving aside the indications in Homer and in the evidences of the statuary of Ancient Greece that woman bore some part in the medical art of the period, the paucity of records of their intimate life has left us so in the dark that possibly we have too easily accepted the view that woman was the ancient Greek's slave, that outside of harlotry they spent their time exclusively in baking cookies and stirring soup. But we refuse to go so far as to think of Plato adding nothing to the wisdom of his day, though we persist in the belief that he was an exceptionally gifted man in an exceptional epoch. There is much to show he took the world as he found it and he left it uninfluenced immediately by his labors, but later generations of men have been made immeasurably richer because he lived. In this sense we insist he added much to what he found. His advanced woman's rights doctrine could hardly have been put in practise except by more primitive men of matrilineal descent.

The hetaerae, of a social standing in Athens little understood by us, but evidently quite different from the woman of shady reputation today, may have been a phenomenon of the same spirit of the emancipation of women pervading the Athens of Plato's day as our own and absorbed by him. In so far as Plato borrowed from his environment his sentiments in regard to women in the *Republic* may have had such an origin. It is true, however, that Plato and Hippocrates have done much to create for us the atmosphere of Athens, yet we find in Euripides and Herodotus the intrusion of the same common influences. In the best known and the first of the Aphorisms of Hippocrates, life is short and art long, opportunity is fleeting, experience fallacious and judgment difficult.

All this is to be found in Homer, Herodotus, Euripides, Plato. The argument ascribed to Protagoras in the dialogue of that name turns upon the impotence of the senses in the face of truth. It was part of the intellectual atmosphere of Athens and the Greek civilization. We are still philosophizing about it. It has always been in the atmosphere of man pondering ever that soon he must die. It lives for us in Hippocrates because it is an ever present thought of thinking men.

There is a corollary to this doctrine of Protagoras which has implications of interest to us. He goes on to say there are innumerable things, meats, drinks, medicines, partly helpful to man and partly the contrary, some helpful to horses and some only to dogs, some to animals and some to plants. For instance oil harmful to plants is beneficial to the skin and hair of man and harmful to his vegetative system when taken inwardly. Plato does not insert "vegetative," but I do to draw attention to the principle of analogy Empedocles taught the world in comparing the absorption of the nutriment by animals to the sustenance the roots of plants draw to themselves from the soil. Protagoras points out its variations in both kingdoms. The earth produced men when Cadmus sowed the dragon's teeth in the old myth. Earth is the mother of us all is an apothegm we are familiar with. Hippocrates in the *Airs, Waters and Places* showed us how it influences us toward variations.

With the senses varying and things ever varying in their relation one to another, no one ever stepping twice into the same river, no wonder Hippocrates got from his environment the thought of Protagoras and Heraclitus—the thought that experience is misleading and foresight difficult. The wonder is that we so often forget it—Plato in his Pythagorean lurch toward excluding meat from the diet of every one, the silly recrudescence of it in our day, the ridiculous abuse of statistics, in cramming the squirming mass of always differing living things into one category. What possible interest to us are the average amount of calories a man needs to keep him going, when the real amount the patient requires depends on a thousand factors which no scales can measure? Man is the measure of all things Protagoras insisted—individual man, he meant, not man in the mass.

Fifty Years in the Practice of Medicine*

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(*Concluded from page* 41)

These two radiant forces blend to facilitate the diagnosis of obscure conditions and certain restoration of health to persons previously regarded beyond relief by human skill. The x rays make it possible for Jackson and his school of bronchoscopists to follow the foreign body to its resting place in the smaller bronchi. I pause to speak of the last patient upon whom he performed tracheotomy. He had done intubation using, for want of a better, a tube rather small for the age of the child. Two days later the dyspnea recurred and not finding the tube in the larynx, feared that it had slipped into the trachea, and not desiring to add another he did a tracheotomy. The patient was relieved but the tube was not discovered. Two days later it passed through the intestine, having been coughed out of the larynx and swallowed. Today the position of such a tube would be made known by the rays. Thirty years ago a good x ray picture of the hand could be secured by a thirty minute exposure, now a better one can be obtained in one hundredth of a second.

The progress of development in fifty years in every department of surgery and in obstetrics has been marvelous, but valuable and farreaching as they have been in promoting health and saving life, they pale into insignificance when compared with the progress that has been made in internal medicine. Suspicion had long existed, that the occurrence of the plague, cholera, malaria, yellow, typhoid and typhus fevers, scarlatina, measles and syphilis were due to some infective organisms. In 1881, Laveran described some bodies found in the blood of malarial subjects which he called oscillariæ malaria, which subsequent to the further investigations of Marchifava and Celli became known as the Plasmodium malariæ. Singularly enough, Dr. Joseph Jones, of Louisiana, had been investigating the blood of malarial victims since 1859, and from his knowledge of the microscopic appearance of blood was able, not only to say that some stains, found upon the clothing of a man accused of murder, were not from paint, as he claimed, but blood, and that of a sufferer from malaria. A similar report on some stains on the door of a safe and the knowledge that the victim of the murder suffered from malaria, led to the conviction and execution of the murderer. This trial took place in 1877, while Laveran's discovery was not made until 1881. He had not, like Laveran, described the blood changes he had observed.

Although the most capable pathologists devoted themselves with the greatest enthusiasm to the study of these bodies, it remained a problem how they reached the blood of the victim, this, too, in spite of the fact that the mosquitoes were singing and stinging in all the affected areas, delightedly endeavoring to disclose their part in the tragedy. One could not but think, that if the mosquito could have knowledge of the situation, she would be inclined to exclaim:

"What fools these mortals be."

To follow the researches into the causes of these diseases is as interesting as a romance, and demonstrates that the research worker must be possessed of imagination. It is said that when Ross in India was investigating the filaria in the blood, the specimens supplied by one of the natives employed to make collections was much richer in organisms than those supplied by any other, inquiry disclosed that he was employed during the day and made his collections at night. Ross concluded that the organism completing its cycle, at night approached the skin where some suction insect received and transported to the next victim. The mosquito occurred to him as the insect to be investigated and his researches disclosed a species of the mosquito, the culex, as the promotor and transmitter. Later, in 1894, Ross was obliged to leave India as Manson began his investigations as to the medium through which malaria was transmitted and suggested to Manson that he investigate the mosquito and another species, the anopheles was found guilty.

Yellow fever was found endemic among the natives when America was discovered. Some parts of the West Indies and the coasts of Central and South America continuously supplied its victims. In 1802, when the French sent an expedition to Haiti, twenty-two thousand out of a force of twenty-five thousand men died of yellow fever in six months and those remaining were too enfeebled to make an effective invasion. The disease became epidemic, at times, in the coast cities of the United States from Boston to New Orleans. The disease was supposed to be transmitted by fomites and much dread was experienced during the Civil War that Confederate sympathizers would transmit the disease in infected clothing conveyed through Canada.

When Walter Reed went to Havana to study how the organism of yellow fever completed its cycle, he was already imbued with the inclination to investigate the mosquito, from his knowledge of what had been ascertained by Ross and Manson in their study of filaria and malaria. The particular mosquito was indicated to him by Dr. Carlos Finley, who had studied yellow fever since 1881 and had come to regard the Stegomyia fasciata as the responsible agent. In screened buildings Reed had nonimmunes sleep, for two weeks, in bedding and clothing used by yellow fever patients without development of a single case, when he had some of them bitten by the stegomyia and within forty-eight to seventy-two hours yellow fever occurred in such victims. Dr. Lazear and Dr. Walter Reed lost their lives in establishing the truth of this theory. Their sacrifice with the subsequent employment of the knowledge by General Gorgas meant the obliteration of yellow fever; made possible the building of the Panama Canal and permitted the establishment of health resorts in places that previously were but pest stations.

Great tracts which were formerly almost uninhabitable, from the ravages of malaria, now afford comfortable homes for a large population, and permit the conduct of great enterprises which were previously thought impossible.

Great as were the benefits secured to the race through the methods employed to control tropical diseases, they were nothing in comparison with the security and sense of safety obtained by the researches into the causes and methods of diphtheria and typhoid fever. The treatment of these diseases occupied a good part of the attention of the general practitioner in the years between 1875 and 1900. I was soon impressed with the futility of the treatment of diphtheritic croup with calomel and tartar emetic, the recognized agents. I saw these patients struggling for breath until a good part of the lung structure would collapse. I continually urged early tracheotomy, but was only able to secure its consideration when it was evident that nothing else would avail. I did the operation ten times before I was awarded with a recovery. I was the first physician in Philadelphia to practise intubation, and in 1888 gave an analysis of twenty-five patients on whom I had practised the latter operation; twenty-two of these were seen in consultation, in many of whom no measure was longer of any avail. The patients in my own practice all recovered. One patient had to wear a tube twenty-one days before it could be discarded. Of the twenty-five patients, thirteen or fifty-two per cent. recovered.

The discovery of the Klebs-Loeffler bacillus as the organism causing diphtheria and the development of serum therapy has made diphtheria a disease, death, from which, is inexcusable, as injections of antitoxine given the first day of the disease are invariably effective.

The New York Board of Health met December 15, 1894, and agreed to provide its physicians with antitoxine for the treatment of diphtheria. It was the first city organization to institute such measures. E. H. Place says the lives saved by diphtheria antitoxine since 1895 may be numbered in millions, yet fifteen thousand die annually in this country from failure to receive antitoxine at all, or to get it sufficiently early.

The employment of the Schick test and the employment of the toxine antitoxine injections in the positive cases ensures immunity for those thus treated for a period of three and one half years.

Typhoid fever presents another notable example of medical progress. During the Centennial year, 1876, the deaths from typhoid fever in Philadelphia numbered 761, which with the population of the city at that time was more than a hundred in 100,000 while in 1923 the mortality from typhoid fever was but 1.55 in 100,000. The deaths given for 1876 were but part of the record, for sick and infected visitors returned from the exposition to nearly every hamlet in the eastern half of the United States, many of them to die, causing Philadelphia to lose more in reputation through this disease than she gained by the Centennial Exposition. Purer water, cleaner streets, and better drainage have done much to lessen the mortality. Director Krusen informs me that the records of mortality from this disease in Philadelphia in 1923 is better than that of any large city in this country. The possibility of the control of typhoid fever is better shown by consulting the army records, which present the results of preventive measures that were made obligatory.

Chantemesse in 1896 announced that he had procured a serum from an inoculated horse, the inoculation of a guineapig with one fifth of a drop of which protected it against a dose of toxine, fatal to an unprotected animal. Further investigation so demonstrated its efficiency that in the late World War its use was made obligatory. During the Spanish-American War the sickness and casualties from typhoid fever became a national disgrace, as one soldier in every seven had the fever and one in seventy-one died.

Among the four million serving in the late war, there were but 1,305 cases of the fever, and but 156 deaths. This was equivalent to one case occurring in every 3,756, and a death in every 25,641. Had the incidence and mortality been in proportion to that of the Spanish-American War, there would have been 571,428 cases of fever and 56,388 deaths.

Probably no disease has received more consideration during the last fifty years than has tuberculosis. With the discovery of the tubercle bacillus by Koch and the introduction of his antituberculous serum it was hoped that the disease might be exterminated. Unfortunately, no serum has effected the expected results, and this disease continues to levy a heavier toll than is exacted by any other. Much has been accomplished by sanitation, in better housing and living conditions, and the recognition of the important part played by the administration of good and by living in the open.

Ransome says that in Great Britain phthisis has steadily declined from 3,800 in 100,000 in 1838 to 1,305 in 100,000 in 1896. In Philadelphia in 1873, with a population of less than 600,000, there were 2,291 deaths from pulmonary tuberculosis. In 1923, with a population of more than 1,800,000, there were 3,674 cases reported, with 2,162 deaths. With, at least, three times the population, one hundred fewer deaths occurred.

Investigations in later years have changed our views on many obscure conditions. What are called focal infections, originating in abscessed teeth, diseased tonsils, suppurating sinuses, infections of the gallbladder, appendix, seminal vesicles, prostate or cervix, have been found to have been the source from which originated arthritis, bone affections, chronic inflammation of the ovary and other lesions. It is quite possible that many persons are unnecessarily mumbling their food, sans teeth, or have sacrificed inoffensive tonsils, but the knowledge that such infections may cause disease through the blood, has afforded means to secure improved health, lessen discomfort and prolong life.

One naturally shrinks from the thought of advancing age, with its limitations; its assurance of lessening tenure of life; the possibility of lowered physical and mental vitality; but it has its compensations. It can not but be a source of gratification that one has known men who have done much to make medicine creditable; men like Atlee, Pancoast, Gross, Agnew, Marion Sims, Emmet and Battey; to have worked with Goodell, Pepper, Tyson, J. M. DaCosta and Osler; to have been associated in medi-

cal conventions with men who have elevated and dignified our profession. Among these the name of General W. C. Gorgas projects as a beacon light. Under his ministrations yellow fever was obliterated from the list of death causes in Cuba, where it had been continually endemic for 150 years. Yellow fever and malaria were banished from the Isthmus of Panama, rendering deaths from all causes there, but eight in 1,000, while at the same time our northern cities had a death rate of fifteen in 1,000. His work did more to make possible the Panama Canal than the work of its engineers. The morbidity and mortality rates would be creditable in the best health resorts.

Was it not fortunate that such a man could direct the medical service in the World War? The record already given of the typhoid fever incidence in the army has demonstrated his efficiency. In Great Britain he would have been knighted and placed beyond want for the remainder of his days. When the inevitable time came for his retirement from the active service of the army, he was not permitted to rest, but was called on to clean up the pest places of the world. South America, Egypt and India, all demanded his service. What wonderful privileges are enjoyed by the practitioner of the present day? His is the heritage of the last fifty years of progress, not exceeded by any previous century in the world's history. Tests and reactions are at his command to dispel all doubt. The skeleton, the various organs and their actions can be rendered visible at his command.

Pathology, physiology and chemistry, instead of being abstract sciences remote from application, are his handmaidens, to make easy his diagnosis, and ensure his success in treatment. With all the opportunities he has gained, it becomes a question whether he has not lost quite as much. The increased time he has had to devote to the preparation, for the practice of his profession, in the years when a man is forming the habits and impulses, which are to actuate and direct his life; the inability of any one mind to retain all the details necessary for scientific diagnosis and practice, and the intense interest of the scientific side of the investigation, have necessarily led to specialization.

The dependence upon tests and reactions, the greater accuracy of such scientific investigations have served to exclude the practitioner from the study of the individual, to cause him to lose that psychic inspiration so essential to the encouragement of the depressed physically and mentally ill. One has to guard himself against regarding the patient as the means toward a scientific goal, and lead him to forget that the interests of the individual should ever have first consideration.

How often is seen a man well qualified for practice, possessed of the requirements for diagnosis and treatment, failing of success, while another, much his inferior in intelligence and scientific attainments, acquires a large practice, because he possesses that human touch; that ability to make his patients feel that their interests only, are his first consideration and thus is acceptable to all who come under his influence.

The physician today should be unsparing in his acquisition of scientific knowledge, unfailing in his efforts to exercise the most approved tests and reactions, faithfully seek to employ the best treatment, but must never forget that the acquisition of the confidence of his patient is the best drug he can employ. Its acquisition is the goal, for which he must constantly strive, in order to attain to the highest success.

When the author considers what has been achieved, what is being done and what seems to be gilding the coming dawn, he is constrained to exclaim:

> "Oh! to be alive in such an age,
> When every year's a wonder stage."

The Breviarie of Health, by Andrew Boorde. —Dr. W. G. Aitchison Robertson writes (*Annals of Medical History,* December, 1924) that it is not difficult to discover in reading this early medical work that we have in it an example of the priest physician in the early days of medical practice.

Andrew Boorde or Börde was born at Boords Hill in Sussex, England, about 1490, and thirty years later was made suffragan bishop of Chichester. He was a Carthusian monk and for many years lived an austere life, fasting and abstaining from all forms of animal food. Finally in 1528 he wrote to the prior "I am nott able to byd the rugorositie off your relygyon," which brought him a dispensation to trâvel abroad "for to have the notycon and practes of Physyche in divers regyons and countres." He returned to England in 1530. Having attended the Duke of Norfolk in a dangerous illness and having secured his favor, he was "convocated to wayte on his prepotent mageste," Henry VIII. But not considering his medical education complete, he visited the universities and schools of Orléans, Poictiers, Toulouse and Montpellier; also Wittenberg, Rome and Compostella. When he returned he was disciplined by the church and kept a prisoner until released by his friend Cromwell, who sent him abroad on a political mission. Upon his return he spent some time in Glasgow and later in London, but was not looked upon with favor in either place.

Dr. Robertson quotes somewhat at length from the book, *A Propheme to Chirurgions,* which contains some excellent points for consumption today curiously mingled with most childish superstitions: "Masters of Chirurgerie ought to bee esperte in their facultie, having good wittes and memorie, evermore to be diligent and attendable about their cures and able to minister such salves and medicines as is according to the infirmity. They ought also to be wise, gentill, sober, circumspect and learned and not dronken and to promise no more than they are able to perfourme with God's helpe and not to be boisterous about his pacients but lovingly to comfort them. . . . Chirurgions much know the operation and the conjunction of the moone and in what signe the moone is in every day and to know what signes be attractive, what signes be recentive, or expulsive or digestive. They must also know the operacion of all manner of breades, of drinckes and of meates, and to have ever in a redines their instruments and their salves. In perillous cases one Chirurgion ought to consult with another and to have counsell of a Docteur of Phisick, for ther is no man can be sure to help a man, as God knoweth, who keepe us all. Amen."

Practical Therapeutics

MERCURY, NOVARSENOBILLON, QUININE AND LEUCOCYTOSIS

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Something over a year ago it was proved in the Municipal Laboratory of Southampton, with the aid of the former Borough Pathologist, Dr. Harry Simson, that the intramuscular injection of salicylate of mercury is followed by a marked increase in the production of white blood cells, so explaining to my satisfaction the potent influence of this drug on most of the manifestations of syphilis, furunculosis and infected wounds. In the treatment of the latter infections I have seen uniformly good results for about eight years in various parts of the world. Always up to this time the drug was used in the belief that the mercury was having its socalled specific influence on the treponemæ and that I had been fortunate in finding that this effect was so easily extended to the pyogenic organisms.

To me the knowledge that the oldest drug we know induced an increase of white cells seemed very much more logical and reasonable in explaining its satisfactory action, in the treatment of the disease for which it is principally used, as well as the others, in which I had seen its powers manifested. This chain of reasoning seemed clear. It is a matter of common knowledge that a man in the best condition, at "the top of his form" has a high white cell count. One in such condition can stand exposure to most infections unharmed. In one not so fit, when harmful infecting organisms do find lodgement, there is, in most infections, an immediate rise in the white cell count. So one would conclude that these cells were directly involved in the phenomenon of resistance.

Next we find that the oldest and most widely used drug known to medical men produces a very marked increase in these apparently protective organisms. Did it not seem cogent that there is a distinct promise in the treatment of other infections in the application of the principle of an easily induced increase in white cells?

I thought that it did, and the year's experience here in the application of the idea has been far more successful than I had ever hoped. At my suggestion encephalitis lethargica in the Liverpool City Isolation Hospital, Fazakerley, is said to have been successfully treated in application of this principle, by Dr. C. Rundle, officer in charge and his staff, thirty-nine patients being given an average of four injections each of one grain of the salicylate of mercury in oily suspension. All recovered satisfactorily. In some the improvement is said by Dr. Rundle to have been striking. One patient who came in on the ninth day of the infection died after having had one injection.

Thirty-one cases of trachoma among Poles and Russians who were detained because of this infection at Atlantic Park, Eastleigh, Hampshire, have been treated by Dr. Frank McGee, the medical officer in charge, and by Dr. Arthur Zorab, of the Eye Hospital, Southampton, as consultant.

Treatment of these patients on the principle of the induced increase of leucocytes was begun in November, 1923. In March they began to be passed as cured of trachoma by all examining officers here and in New York and in Montreal. So far twenty-five of the original thirty-one patients have been declared cured and are now residents of the United States and Canada. In these cases from twelve to thirty-five injections of salicylate of mercury were given. In four of the remaining cases novarsenobillon is being given with good results, as will be told by Dr. Seager Thomas.

The usual local treatment of rolling the lids and the application of copper sulphate, one per cent. solution of perchloride of mercury, has been used, together with the injection of salicylate of mercury given once a week during periods of six to eight weeks, a rest being given to allow the individual to reestablish a sensitiveness to the mercury. This is done because we have learned that with each successive dose or injection the rise in the white cell count is diminished, finally becoming negligible after six or seven weeks; no increase in white cells—no noticeable change in the trachomatous lesion. This seems to me to be the only logical reason, for the instructions given in college, borne out by the experiences of the following years, that in the treatment of syphilis, mercury must be given in series or courses. Experience taught that after a few weeks of mercury obstinate lesions failed to continue to improve. A rest being given, the administration of mercury was followed again by improvement of the evidence of the infection.

Blood counts showing rapid decline in the powers of the stimulation of the production of white cells after repeated injections of the drug, would seem to furnish a reasonable explanation.

In the attempt to extend the principle of the treatment of infections by this induced increase in white cells I have seen or known of rapid, certain and satisfactory results in arthritis, asthma, bronchiectasis, pyelitis, acute otitis media, eczema, not yet diagnosed abnormalities or infections of the skin, iritis, iridocyclitis, carbuncle and hay fever, after one to three injections each.

Last spring at the usual time, a friend had his fourteenth recurrence of hay fever, conjunctivitis, congested nasal membranes with cough, sneezing and ordinary discomfort of the infection. On the theory that more white cells would help him, they were induced to mobilize by the injection of salicylate of mercury. On this day he had used seven handkerchiefs. I saw him twenty-four hours after the injection. There was no evidence of any irritation about the eyes, no swelling of the nasal membranes, his breathing was clear, and he proudly showed, still folded and not used, the four handkerchiefs with which he had provided himself on leaving his home in the morning. I had hoped for improvement but never had I thought it possible for one to be so changed in twenty-four hours. I at once called up

Dr. Arthur Zorab, whom I knew was regularly using the salicylate to tell him of the unusual happy result.

Dr. Zorab on hearing the words hay fever and salicylate said: "Go no further, I know, I have just used it on two cases with equally good result." So Dr. Zorab has priority in the use of the drug for hay fever, and he used it on twice as many cases as I did. He used it to better effect, for there was no return of the infection in his cases. The evidence of infection returned in my friend in six days, not as severe as at first but enough for much discomfort. The second injection of the salicylate was not so potent as the first. His discomfort continuing on the third day of the recurrence, in the belief that novarsenobillon also stimulated the production of white cells, he was given .45. He grew rapidly better and had the best year he has had for fourteen years.

Not having ready access to any laboratory, the belief that novarsenobillon and quinine derived their potency from their power to stimulate the production of white cells, was unproved for six months. Then the belief became so strong that a call was made on Dr. Seager Thomas, a pathologist in Southampton, at his laboratory. Dr. Seager Thomas was cordial and showed every evidence of a kindly will to aid in the proof or disproof of the idea. He will tell of his findings in the following paper, and of his observations of the use of novarsenobillon in furunculosis and trachoma, of the longer duration of the induced increase in white cells, of the apparently longer continued sensitiveness to the drug, of the effect of the other specific quinine on the white cells.

With the observation of the effect of an increase in white cells on infection for so long a time, and the additional proof of the action of novarsenobillon and quinine, the promise held out for satisfactory use by an extension of the application of the principle, seems great. For surgeons to add to the directions for the preparation of a patient for operation, the administration of three tenths to six tenths novarsenobillon on the morning of the day of operative procedure would be to muster a potent prophylact against infection. If I am not altogether wrong, the operator will see wounds close faster, with seldom a stitch abscess, than he has ever seen before. About the usual time for the appearance of infection, forty-eight hours after the operation, the white cell count will be about the maximum, and according to all my experience the pyogenic organisms will have a short life. In obstetrical cases the administration of the drug after delivery of the infant, in order that this greatest increase be had two days after, will hasten the repair of the cervix and other wounds and add to the comfort of the convalescence. In fresh lacerated wounds, where the probabilities of infection are great, novarsenobillon in proper amount will be useful. From the effect I have seen of this increase in white cells in the treatment of pleurisy and bronchiectasis the latter case being one of Dr. W. A. Elliott's, of Southampton, I feel sure that good results will be had in the treatment of either bronchopneumonia or lobar pneumonia from the use of novarsenobillon.

For those who still have a doubt, let me suggest that they take a healthy control, not a regular drinker, for the blood of every regular drinker I have seen counted is abnormal. Usually counts of from 12,000 per c.m. to 20,000 per c.m. increase to 18,000 to 23,000 per c.m. by mercury or novarsenobillon. So the regular drinker is not a good control. But take a healthy control, make a blood count, give him novarsenobillon, other counts in twenty-four and forty-eight hours and some interesting blood changes and fields will be seen.

THE ARTIFICIAL INDUCTION OF LEUCOCYTOSIS

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Southampton

There has recently been a fairly considerable use of salicylate of mercury in a more or less empirical manner for the treatment of a variety of conditions, notably trachoma, staphylococcal infections, e. g., furunculosis, and encephalitis lethargica.

The major portion of this therapy has been somewhat spasmodic and disconnected, but for many years in several quarters of the globe salicylate of mercury has been used consistently in many different types of cases by Dr. Burr Ferguson of the United States Public Health Service. Dr. Ferguson's communication refers to his experiences in this direction and to that article these notes are simply a pathological postscript.

His successes with mercury, to which he refers as one of the specifics, led Dr. Ferguson to attempt the substitution of novarsenobillon or alternatively quinine for the mercury. His results need not be described again here. Finding that similarly satisfactory effects followed the use of these drugs also, he felt that a hypothesis to explain provisionally the rationale of the treatment would be of interest and value. His observations led him to the belief that these drugs owed their efficacy to a power of artificially inducing leucocytosis.

This view led to a certain amount of amicable controversy, and I, on being offered the opportunity of investigating the leucocyte variations in a number of subjects, considered that it would be only sensible to test Dr. Ferguson's hypothesis by a rigid application of the scientific method.

The first stage—recording of observations—is supplied by Dr. Ferguson's own records of cases and those of other medical men.

The second stage—formulation of a provisional hypothesis—is supplied by Dr. Ferguson's suggestion that the drugs act as inducers of leucocytosis.

It next becomes necessary to perform a number of carefully controlled experiments, record the results, and see whether these are in accordance with the provisional hypothesis. The work is in active progress now, and an indication of the results obtained is the purpose of this communication.

Should the results obtained support the provisional hypothesis, or a modification of it, then we can be said to have a theory of the action of these drugs, and such a theory should be capable of application, 1, satisfactorily to explain apparent exceptions, and 2, accurately to predict the influence of one of these drugs upon the blood picture in a given case. Such

applications of the theory if successful, constitute scientific proof of its correctness. Both these exercises have been performed.

The reason for publishing any of the laboratory findings at this admittedly early stage of the investigation, may not at once be clear. It has been reported that several laboratories in Germany are busily engaged in the search for an agent for the artificial induction of leucocytosis. It seemed therefore not unwise to record the fact that an investigation into just such properties possessed by well known drugs had already been initiated. It is not claimed that the necessary experiments, observations and correlation of the results are as yet in anything but the very earliest stage.

I have seen a number of successful cases, most of which were treated by novarsenobillon (there was no reason to suggest syphilis, nor was the drug administered for this disease). A series of cases of trachoma were among those which made the most vivid impression. There is, however, no intention to refer to the purely therapeutic aspects of these cases here, as favorable testimony from this point of view is forthcoming from clinicians.

An indication of the hematological results is given below:

SALICYLATE OF MERCURY

WHITE BLOOD CELLS PER C.MM.

Subject	*Before intramuscular administration of one gr. mercury salicylate*	*24 hours later*
D. M.	7,000	20,400
M. P.	8,000	17,000
M. C.	18,800	21,800

BIHYDROCHLORIDE OF QUININE

Subject	*Before intramuscular administration of seven and one-half gr. of quinine bihydrochloride*	*24 hours later*
J. M.	11,000	14,000
C. P.	9,300	12,700

(five gr. only given)

NOVARSENOBILLON

EFFECT OF INTRAVENOUS NOVARSENOBILLON (DOSE VARIES FROM .3 TO .6 GRAM, ACCORDING TO SIZE OF SUBJECT)

Subject	*Before N.A.B.*	*24 hours later*	*7 days later*		*24 hours later*	*7 days later*
B. F.	7.200	10.200	9.800	Second injection given on seventh day	.....	.....
J. M.	10.400	22.800	21.800		.....	.....
C. P.	7.200	10.200	9.300		.....	.....
K.	7.600	10.600	12.400		17.100	14.600
B.	8.800	13.000	13.800		14.400	.....
R.	7.900	12.500	10.800		13.200	.....
G.	7.400	12.600	14.000		10.600	.....
M. G.	10.000	14.000	12.000		.....	.....

It will be seen from the foregoing tabulated results that mercury, quinine bihydrochloride and novarsenobillon are powerful inducers of leucocytosis. The investigation with regard to quinine was not continued for the following reasons: 1, the injection is distinctly painful, and 2, it appeared to have no advantage over mercury or novarsenobillon.

Previous leucocyte counts carried out for Dr. Ferguson (at other laboratories) have shown that a tolerance to mercury is somewhat rapidly established. The leucocyte count returning early to normal and being comparatively little raised by repeat injections.

In novarsenobillon we have an agent practically painless in administration and at least as safe as either of the others in suitably selected cases. Its first effect upon the leucocyte count is at least as marked, its period of maintained leucocyte increase much longer, and its effect at repeated injections much greater and more constant than in the case of the mercury and the quinine. There seems to be very little doubt, that in novarsenobillon and its variants we have a very constant and dependable agent for inducing leucocytosis, where this is desirable.

One of the apparent exceptions was a case in which the count before injection of novarsenobillon was 17,000 per c.mm. and twenty-four hours later had dropped to 12,600 c.mm. The result, however, had been anticipated as one of two probable results of the injection. The subject was a patient who had a large, acute boil. It was anticipated that either 1, the boil would discharge completely, within a few hours of the treatment thereby rapidly removing the cause of his natural leucocytosis, and producing a drop in the count, which, however, would be artificially prevented from returning to normal, or 2, he would have added to his natural, a further artificial leucocytosis if the boil still persisted as a focus of pus under pressure, and yield a count somewhere near 25,000.

I have suggested in order to explain sundry cases where the customary relief does not occur, a modification of the simple leucocytosis theory of Dr. Ferguson. It seems but reasonable to believe that however successful one may be in inducing leucocytosis, the army of phagocytes will be ineffective if unattended by munitions of war, the multifarious antibodies, and it is now proposed to observe the effect of the administration of novarsenobillon to patients whose specific antibody formation has been stimulated by autogenous vaccines. It appears to me a more sound rationale to bend to one's purpose not the cellular factors alone, but also the humoral factors of immunity.

At first differential white cell counts were made but it was soon seen that with slight exceptions (in one or two cases there was slight eosinophilia; in others increase of endothelial cells and occasionally some polymorphonuclear increase) the variations in the relative counts remained within the limits of the normal. The differential counts were then discontinued.

These investigations will take time, but in due course the complete record will be to hand. It appears to be a promising field in which laboratories having at their command a greater abundance of material than is at our disposal here, could find a very valuable sphere of activity.

INDUCED LEUCOCYTOSIS IN THE TREATMENT OF INFECTIONS

W. A. Elliott, M.B., B.S.

Southampton

Some months ago Dr. Burr Ferguson of the United States Public Health Service, Southampton, spoke to me about the results which he had obtained by the use of injections of salicylate of mercury for treating infective conditions. His great faith in and enthusiasm about this method of treatment impressed me so much that I decided to try it on some suitable cases in my practice. The method consists in the intramuscular injection of a mixture of salicylate

of mercury in goose oil, one c. c. being injected at intervals of one week up to four or six doses, or less if the desired result is obtained earlier. This is the usual method of course in treating syphilis.

Some of the cases which I tried were as follows:

Case I.—Patient aged forty-six years with a condition of chronic infection of the lungs, following pneumonia, bronchiectasis. This showed itself in attacks of pyrexia and chest pains whenever this patient had a chill, which confined him to bed and made him extremely ill for a time. There were physical signs of chronic pleurisy. This man had been immersed in the sea for many hours after a torpedo attack on his ship during the war, and it was subsequent to this that his chest trouble commenced. During one bad attack I waited until the more acute symptoms had subsided and then gave him two injections of salicylate of mercury at an interval of five days. The result was a complete recovery with abatement of all chest pains, and free and easy breathing resulted. Moreover, the most encouraging result of the treatment was the enthusiasm of the patient himself, who stated that he felt a "different man." Previous to these injections he stated that he had a chronic depression of spirits, with a feeling as though there was a load on his chest and weights on his legs. After the injections he was buoyant again, and walked more lightly and with the elasticity which he used to have before his attack of pneumonia. The good results obtained have so far persisted.

Case II.—A patient aged fifty-one years was suffering from a fairly large carbuncle on the back of the neck, with which he was confined to bed and suffering from much pain. The carbuncle was having the usual treatment of boracic fomentations and was steadily enlarging and forming a central crater containing a large mass of hard, dead epithelial débris. I gave him an intramuscular injection of one c. c. of salicylate of mercury, and on the following morning there was a most perceptible softening of the mass. It continued daily to get rapidly better, the slough being cast off and an uneventful recovery ensued.

Case III.—A female patient, aged between fifty and sixty years, was suffering from a chronic dermatitis of the whole body with bleb formation and much irritation. I treated this with calamine lotion, and in several weeks there was a marked improvement over the whole body, but new formations of blebs continued to appear. I therefore gave her two injections of salicylate of mercury at an interval of five days, and complete recovery ensued, no further outbreak of blebs occurring. The condition had been troubling her for many months.

I may here state that for local infections of the skin I have long had a strong faith in calamine lotion just as Dr. Ferguson has in the intramuscular injections of salicylate of mercury. It seems to have a peculiar, or what is usually termed a specific effect in healing skin infection. This is evidently something apart from the mere killing of germs by an antiseptic action of the agent used. Dr. Ferguson has investigated the results on the blood of the injection of salicylate of mercury with the assistance of Dr. Simson, who was tuberculosis officer at Southampton at the time. His results are most illuminating, as they show that an immediate general leucocytosis occurs in the blood within twenty-four hours of the injection. Moreover, he has found that certain salts of arsenic produce a similar effect. Also that quinine, the socalled specific for malaria, produces a similar leucocytosis, though not so pronounced in extent. The conclusions drawn are, that the specific action of mercury, arsenic and quinine in certain diseases are all due to a general leucocytosis produced in the blood.

In my opinion the local use of calamine lotion produces a local area of leucocytosis which causes its socalled specific action in skin infections and the same effect is produced by mercuric ointment. In this case the salt of the heavy metal zinc produces the result locally. I have repeatedly noticed a bluish coloration of the skin around the areas treated with calamine lotion, suggesting a blood change at that area. This leucocytosis of the blood is considered by Dr. Ferguson to be the reason for the happy results which he has repeatedly gained by the intramuscular injections of salicylate of mercury for infective conditions, the increased number of leucocytes killing the infective agents.

The treatment of the septic sores and chronic boils occurring during the hot seasons among troops, in tropical climates, such as India and Mesopotamia, could, in my opinion, be most successfully treated by this method of intramuscular injection of certain salts of mercury or arsenic, instead of the cumbrous and costly production of vaccine for injection.

Metabolic Changes Associated With X Ray and Radium Treatment.—E. C. Dodds and J. H. Douglas Webster (*Lancet*, March 15, 1924) conclude as follows: 1. Exactly similar results were found in patients treated with x rays or with gamma rays. 2. The changes in metabolism produced in the patients were found to vary with the site radiated, as irradiation of the head, thorax, and limbs produced no change in the metabolism of the cases examined, but radiation of the abdomen and spleen produced definite urinary and blood changes—namely a sudden fall in the twenty-four hourly amounts of urea, uric acid, ammonia, titratable acidity, creatinin, total nitrogen and phosphates; the volume of the urine was also greatly decreased. After about three days the excretion of these substances again became normal. The chloride content and diastase showed an immediate increase, returning to normal in three to six days. The blood showed mainly a marked decrease in the urea. The feces showed an immediate increase in the fecal fat content. These results show that the effects of abdominal irradiation are due to a temporary inhibition of the function of the principal abdominal glands, such as the liver, pancreas and kidneys. Irradiation of the cervical region produced no change in the metabolism as evinced by study of the blood and urine except an immediate fall in the excretion of urinary creatinin. 3. Cases of very well marked x ray sickness showed no change and the cause was apparently psychical. 4. Cases treated prophylactically with calcium chloride, etc., before irradiation and with sodium bicarbonate showed less reaction.

Editorial Articles

PRACTITIONERS AND PUBLIC HEALTH

A short time ago a sanitarian remarked to a conference of rural health workers that "At the present time the practising physician is the great obstacle to public health advancement." This severe arraignment was tempered by the statement that public health owed its conception, birth and life to the medical profession and that the obstacles which were now being placed on the road to rural health improvement were the symptoms of a misconception by the medical profession of the intent and purpose of public health endeavor. The speaker also expressed the opinion that this arose out of an apprehension that public health work might eventuate in state medicine, a nebulous hypothesis which presupposed that public health workers were endeavoring to transfer the treatment of the people from the hands of the private practitioner to those of a public medical service.

It is not the leaders of medicine and surgery who entertain such ideas. They realize fully that should state medicine ever come into being, the initial movement will come from the medical profession itself. For the most part, it is the underpaid and overworked country practitioner who sees, in the rural public health movement, a menace to his already too scant income. Country doctors, who used to rely on autumnal typhoid fever to provide food and fuel for the winter, have seen this source of income done away with by antityphoid fever campaigns, while the measures for the control and prevention of diphtheria, scarlet fever and many other communicable infections have deprived them of a considerable number of fees. He has seen in adenoid and tonsil clinics an invasion of his field of practice and naturally he has concluded that the welfare work which was being done under the guise of public health, constituted a further menace to his economic welfare.

In certain sections there is an element of justification in this. Overzealous public health workers have, unfortunately, invaded the field of curative medicines but in the final analysis this has done the practitioner good rather than harm. The dental profession has been quick to realize that the examination of the teeth of school children means an increase in their practice and they have seen in public health propaganda a genuine advancement of the cause of dentistry. The practitioner of medicine has been slower in realizing that out of public health work comes a greater realization of the necessity of maintaining the human organism in healthy functionation at all times and that this means that he will be called upon to assist people in keeping well rather than to try and patch them up after serious physical damage has been done. It is time that the practitioners of medicine and of public health should get together on the basis of mutual understanding, and it is believed that this will result advantageously to both.

As a corollary to the promotion of better understanding and cooperation between the workers in preventive and curative medicine, it is suggested that greater attention should be paid to the matter in the curricula of medical colleges. If the student of medicine can be made to understand early in his career that public health, far from being an agency which menaces the economic welfare of the physician and surgeon, is a genuine aid to him not only because of the improvement which it will bring in his practice but also because a healthy community is far better able to pay its bills than one which is unhealthy, great and lasting good will be accomplished.

THE SPEECH OF MODERN LIFE

Conditions of living in civilized countries have changed so considerably that the medical man of the present day is confronted with problems of which the practitioner of a few years ago knew little or nothing. Epidemic disease has been combated successfully and domestic and personal hygiene is now receiving or about to receive the attention to which by its importance it is entitled and we are probably entering upon an era in which preventive medicine will play the chief part. However, there are diseases prevalent, some say rampant, which are largely due to, or at least greatly aggravated by, the speed at which life is lived. This is a phase of preventive medicine which cannot be overlooked.

At the conference of the Interstate Postgraduate Assembly of America held in the first week of June in London Lord Dawson of Penn, a well known British physician, gave a noteworthy address. The leaders of the medical profession everywhere recognize that medical and surgical treatment is tending towards prevention rather than curative treatment.

The late Sir James Mackenzie was one of the first thoroughly to appreciate this fact and now all the alert members of the profession are following in his footsteps. Lord Dawson pointed out that the places which used to be held by the specific fevers in the sphere of bodily ailments were now being taken by subinfections which deteriorated people slowly rather than killing them quickly. In other words, it is the chronic diseases in place of the

acute affections which we are called upon to fight and many of the causes of these subinfections lay within us. There was a contrast between the way in which the microbes of the acute infections invaded us in force, laid us low and on our recovery left us alone, and the fact that the microbes of the subinfections might be like the poor, always with us. They might share our active lives, troubling us but little when we were fit, and damaging us when we were unfit.

For these subinfections measures of public hygiene were of little avail. It was the condition of the host that mattered. As for the condition of the host, a measure of struggle would make for health, but the difficulty of modern life lay in the overdose of struggle. Modern life was likely to produce, not strength but stress, and particularly in the efficient types of citizens. The central reason for this was that material progress in all that concerned movement had been so rapid that it had outstripped man's rate of adaptation. Instead of taking a rest from the tension of business, the active man of affairs of today made of what should be relaxation as strenuous a time as when he was participating in his daily work.

The pursuit of pleasure with many had become as arduous and tiring as the travail of commerce or whatever he might be engaged in. It was a rush and hustle always and of course this tendency had been immensely aggravated by the rapid means of locomotion. Nor were the effects of high speed life confined to those who actively took part in them as people were both at the same time impressionable and endowed with slight staying powers and the mere fact of living in such an environment brought men to grief.

Attention was directed to the point that much might be done by a more careful selection of the careers and employment of the people. When society reached a wider vista doctors would direct the health of the community rather than spend so much time in undoing bad effects. But the speaker was not in favor of periodic examination which would produce anxiety and do more harm than good. Such work could only be done by one's private physician, and not by sending people to stand in a queue for examination. With regard to remedies for this parlous state of affairs, if they as a profession cast their minds ahead, they would more and more become an educational body, and get away from the bottle medicine and what it stood for. They would teach the hypersensitive man to maintain relaxation.

Psychological culture had a usefulness parallel to physical culture. Rest of body and spirit, and of spirit more than body, is what is required to relieve the strain of an overstressed civilization, and although Lord Dawson did not say it, the hypersensitive man and woman of the period must be taught to rest.

For long this journal has preached the gospel of prevention and it is encouraging to know that the shining lights of the profession and moreover the public are beginning to recognize the truth of this teaching. In this country more than in any other King Hustle holds sway and therefore it is highly appropriate that an American medical journal should have been one of the first and quite the most insistent and consistent to spread the doctrine of preventive medicine in all its aspects. It is a fallacy to believe that the development of preventive measures will injure the practitioner of medicine. It will alter, to some extent, the mode of practice but progress in any *phase of endeavor* brings change. Man is an adaptable animal, the war has driven home that fact, and the medical profession will soon fall in with views inspired and dominated by sound common sense.

PHYSIOTHERAPY

The organization of the American Academy of Physiotherapy was brought about by a need in this field of medicine. The aims of the organization are the standardization of the subject on a scientific basis, the prevention of overenthusiasm concerning methods which have not been thoroughly proved, and the bringing of physiotherapy into its proper place in the various departments of medicine.

The academy is composed largely of medical men who were recognized for their ability in physiotherapy during the world war. It is most fitting, therefore, that the head of physiotherapy in the Army Medical Corps should be chosen as president of the organization, Colonel Frank B. Granger, of Boston. The following excerpt is taken from his address before the first convention of the American Academy of Physiotherapy:

The academy has been organized along broad lines. Provisions have been made for sections such as hydrotherapy, massage, muscle training, physical education, electrotherapy and mechanotherapy. In addition, general sessions will coordinate all these various branches into an intelligent and coordinate whole as an adjunct to all other medical and surgical measures in the treatment of pathological conditions. When this shall have been accomplished the challenge of the cults will have been answered.

In order to accomplish this the support of physicians of the highest professional standing must be enlisted. Therefore it has been proposed to have as associate members those who, while not actually practising physiotherapy, recognize its value and prescribe it for selected cases. This list should and will include the leading men in medicine and surgery.

For active members the test should be professional standing, scientific knowledge of physiotherapy as

well as of medicine in general, personality and adequate clinical experience. The standard of admission should be so high that the acceptance of a candidate would at once stamp the applicant as a sound, safe and scientific physician.

The high standard of work done by the members of the organization was revealed in the papers read at Atlantic City during the convention in May. Among the subjects discussed were: Treatment of tuberculous joints and other bone lesions, physiotherapy in reconstructive surgery, the various aspects of ultraviolet rays including physics and the effects on blood chemistry, tuberculous and other conditions, various aspects of electrosurgery and hydrotherapy, while physics in medicine and diagnosis from various angles were carefully discussed.

The next annual meeting of the academy will be held in the Copley Plaza Hotel, Boston, Mass., October 15th to 17th, when technic in various sections of physiotherapy will be clinically demonstrated in the Boston City Hospital by men prominent in these departments.

CIRCUS AND SIDESHOW

A physician calls attention to the fact that the freaks exhibited in the sideshow of the traveling circus are chiefly the results of disease. He saw, among other wonders, a midget, medically known as a cretin, the result of the misbehavior of the thyroid gland; a giant, a case of acromegaly—again an effect of abnormal working of a ductless gland—the pituitary; the fat lady—due beyond question to some disturbance of one or more of these same important organs; a "wild man of Borneo" made uncanny by rickets, a disease of bad diet; an albino, due to some miscalculation on the part of Nature in proportioning the amount of coloring matter for eyes, skin, or hair; the fish man, made a curiosity by a scaly thickening of the outer layers of the skin, etc.

The doctor remarks that "a sideshow is, to a medical man, a collection of pathological and abnormal individuals which affords a more or less interesting field of study, but I raise the question, Does it seem right or decent that these unfortunate persons should be exposed to the gaze of the public and thus exploited?" We are reminded of another physician who, when asked if he did not wish to visit the sideshow, replied, "No, if you have any fine or beautiful things to show me I would be glad to see them, but I witness enough of the abnormal and ugly every day of my life."

Time was, if we can trust that terrible tale of Victor Hugo's *The Man Who Laughs,* when children were mutilated to make them money getting objects of public curiosity. These modern freaks are not intentionally produced but are due to parental ignorance or lack of medical advancement of the age in which they were born. Though they doubtless suffer little from exposure to the public gaze (and, we suspect, many of them like it) we quite agree with the doctor in wishing they were not exhibited, though we do not begrudge the general public a little normal curiosity over those specimens of Nature's waywardness which are just as strange and not more pitiful even if we know something about their cause.

As a matter of fact the public is really not much interested in these freaks for, while many glance for a moment at these specimens of what they themselves might have been, the majority do not waste their cash on the abnormals but make their way directly to the big tent where they sit for two hours or more on the most uncomfortable of seats imaginable, immensely more interested in the fine specimens of manhood and womanhood whom down in their hearts they envy. We, too, go to the circus but not to the sideshow and the expressive language of the poor deformed camel keeper in William Wilfrid Gibson's fine poem always comes to mind:

> —in the circus ring there's more delight
> Of seemly bodies, goodly in sheer health,
> Bodies trained and tuned to the perfect pitch,
> Eager, blithe, debonaire, from head to heel
> Aglow and alive in every pulse, than elsewhere
> In this machine ridden land of grimy, glum,
> Round shouldered, coughing mechanics.
>
> The only moments I've lived my life in the full
> And that live again in remembrance unfaded, are those
> When I've seen life compact in some perfect body,
> The living God made manifest to man.

Yes, the great majority who visit this perambulating Olympia, which would have made the ancient Greeks exclaim with wondering admiration, are interested in the display of body beauty and accomplishment. The sideshow takes in a few shekels, but it is only on the side and, though it may not be quite the thing to exhibit its unfortunates, the public reacts in healthy fashion, by gazing curiously, pityingly perhaps, and hastening onward to see something better than themselves, from a physical viewpoint.

We would like, however, to call attention to the sad fact that in our exploitation and our apparent enjoyment of abnormal mental conditions we are not so healthy—that we are, on the contrary, abominably vicious. Our daily papers which broadcast the performances of the sociological circus give the places of prominence in the exhibition to the abnormal—to the minute chronicling of the doings of the mentally diseased and the misbehavior of those whom insanitary social conditions have morally deformed. For the daily presentation the latest murderers, thieves (especially the big ones who steal, not from necessity), seekers after divorce, and other pathological specimens who, unfortunately, are none too

rare, are raked together from the ends of the earth for our intimate contemplation and delectation. Some of us glance hastily at the announcements of these freaks but pass quickly to the clowns who occupy the background in the funny page, or perhaps hunt for a gem of beauty in the shape of a little poem nearly lost in the nook of the big canvas but worth many times the price of admission. It is the pathological specimens, the horrible and disgusting, which are featured; the normal and fine things are merely thrown in as a sideshow.

Samuel Butler flayed us deservedly over fifty years ago, in *Erewhon,* for our attitude toward the mentally diseased and the socially deformed, and there is a faint glow of enlightenment in the cast, but so long as there is a demand for the particulars about crime and criminals and so little for details about whatsoever things are beautiful and good and true we are not making much progress toward better mental health and vigor. Time was, and not long ago, when men and women flocked to witness a hanging or a beheading. Doubtless many would do so now if they had the opportunity. They would rush also to see a highway robbery or a murder. Only a comparatively few can avail themselves of the rare treat of attending a trial, but all can see the pictures of where and how the deed was done and of the artists who took part, and they can read a carefully detailed description of just what took place on the unhappy occasion.

Both the showman and the journalist give their audiences what they want to see, but when we compare the annual presentation of the unfortunates in the sideshow of the circus with the exhibition of freaks in the daily papers, there can be no comparison of the injustice and harm done to the victims of heredity or environment who are thus held up to public scrutiny, nor is the evil, or at least lack of good, effect upon the onlookers in the two cases in the least comparable. We need to think as much of mental health as we do of bodily hygiene, and we wish that show and sideshow were as healthily proportioned in the newspaper as they are in the "greatest show on earth."

News Items.

Personal.—Dr. Henry Keller, of New York, has been appointed attending orthopedic surgeon to the Central Neurological Hospital, Department of Public Welfare, New York.

Dr. George O'Hanlon, chairman of the New York State Hospital Conference, and for fifteen years medical superintendent of Bellevue Hospital, has been appointed chief of the Jersey City Hospital, succeeding Dr. John J. Nevin.

Dr. Donald D. Van Slyke, of the Rockefeller Institute, has been honored with the degree of doctor of science by Yale University. Dr. W. J. V. Osterhout of the Institute received the same degree from Harvard.

British Medical Association Meeting.—The annual meeting of this association will be held at Southampton, England, from August 26th to September 2d.

Outpatient Service.—A pamphlet on Needs and Standards of Outpatient Service, has been issued by the Associated Outpatient Clinics of New York.

Course in Electrophysiotherapy.—Dr. Noble M. Eberhart will conduct lectures and clinics in electrophysiotherapy in Chicago, August 3rd to 8th. Information may be obtained from the McIntosh Electrical Corporation of Chicago.

Dental School at N. Y. University.—The New York College of Dentistry will become affiliated with the New York University, retaining, however, its present buildings on East Twenty-third Street.

Portrait of Harvey.—A portrait of William Harvey, painted by Van Dyck, once owned by Oliver Wendell Holmes, has been presented to Jefferson Medical College by Dr. J. Ackerman Coles, of Newark, New Jersey, in memory of his father.

Gift from Dr. Haven Emerson.—Dr. Haven Emerson, of New York, has given to the town of Southold, Long Island, a piece of land at South Harbor, near his summer nome. This is presented as a memorial to the soldiers of the town who died in the war.

Memorial to Doctor Bagg.—A tablet has been unveiled at Metropolitan Hospital, New York, in memory of the late Dr. Clinton L. Bagg. Dr. Bird S. Coler gave an address, and among other speakers were Dr. William F. Honan, Dr. C. C. Boyle, and Dr. G. F. Raynor.

Memorial Lecture. — The Fayette, Pennsylvania, County Medical Society, has voted to establish an annual scientific lecture relating to medicine, to be called the Dr. Hugh Campbell Lectures, in honor of the first graduate physician to locate in the county and also the first president of the society.

Uptown Medical Centre Association Formed.—This organization, for permanent assistance to the Presbyterian-Columbia Medical Centre, has recently been established, with Murray T. Hulbert, former president of the board of aldermen, elected as president. Dr. Louis T. Wright is secretary of the organization.

Women Physicians Meet.—The Institute Fraternity, a national organization of women physicians, recently held its twenty-first annual meeting in New York. Dr. Anna Johnson of Pittsburgh was elected president. The association operates a loan fund, through which five young women are being put through medical school.

Public Health Convention.—The first general meeting of the new Pennsylvania Public Health Association was held at Mont Alto, beginning June 22d; over three hundred were present. The following officers were elected: president, Dr. Charles H. Miner; vice-presidents, Dr. Wilmer Krusen and Dr. Carey J. Vaux, and secretary and treasurer, Dr. William C. Miller.

Dana Medal Awarded.—Dr. Edward Jackson of Denver, Colorado, editor in chief of the *American Journal of Ophthalmology,* has been awarded the Leslie Dana Medal for Prevention of Blindness. This medal, to be given yearly to a person selected by the National Committee for Prevention of Blindness in cooperation with the Missouri Commission for the Blind, was established by Mr. Leslie Dana of St. Louis, a retiring member of the Missouri Commission.

Contagious Diseases in Pittsburgh.—A report released by the Department of Public Health of Pittsburgh reports —for residents only—2360 cases of communicable diseases in May, 1925, compared with 1827, in May, 1925; but with 648 deaths in May this year and 663 in May, 1925. The main increase was in measles, of which there were 1261 cases compared with 125 in May, 1924,—and 14 deaths; also scarlet fever, in which the report is 372 cases, compared with 125 in May, 1924.

Ocean City Seashore Home for Babies.—This institution, at Ocean City, New Jersey, announces the following staff members: Medical direct, Dr. H. H. Perlman, Philadelphia; consulting pediatricians, Dr. J. P. Crozer, Dr. James McKee, and Dr. Jules Blechschmidt, of Philadelphia; visiting pediatrists, Dr. H. H. Perlman, Dr. Howard Reed, and Dr. Alvin E. Siegal, of Philadelphia, Dr. John H. Whiticar, of Ocean City, and Dr. James H. Mason, of Atlantic City; laryngologist and otologist, Dr. William H. Spencer, of Philadelphia; dentist, Dr. Walter B. Adams, of Philadelphia; chief resident physician, Dr. J. T. Doster, of Ocean City.

Book Reviews

DERMATOLOGY

An Introduction to Dermatology. By Sir Norman Walker. Eighth edition with ninety-two plates and eighty Illustrations in the Text. New York: William Wood & Co., 1925.

The popularity of this little textbook of 362 pages is shown by the fact that it has reached its eighth edition. A good deal of the text has been rewritten without enlarging the book, much of the matter relating to rare skin diseases having been omitted. The original edition is stated by the writer to have been a practical reproduction of his lectures. If the latter were anything like the text they must have been highly entertaining as well as sound and instructive. The unconscious humor of the writer is an unusual feature for a work of this kind. It is in no way undignified, however, and certainly adds to the reader's pleasure. The opinions expressed by the author are up to date and are based on many years of experience. The book is unusually well illustrated by colored plates, black and white photographs, and drawings of histological preparations. There are also a reasonable number of formulæ given in both metric systems and apothecaries measure. The book is entitled an introduction to dermatology and as such is all that could be desired. With the exception of the weight of the book which seems somewhat too great for its size the work of the publisher is excellent.

THE BEGINNING OF TUBERCULOSIS

Les Debuts de la Tuberculose Pulmonaire. By Dr. L. Ribadeau-Dumas, Médecin de la Maternité de Paris. Paris: Ernest Flammarion, 1925. Pp. 281.

This is indeed an interesting and novel contribution. Since there exists as yet no specific curative treatment for pulmonary tuberculosis, as for syphilis and malaria, for example, and since tuberculosis is at the same time perhaps the most preventable of all chronic infectious diseases, prophylaxis is the all important issue. Our studies have revealed the etiology of the disease to us very exactly, and the author justly says: "We know that tuberculosis most often begins in infancy." The methods of infection at a very early age are carefully described in the first chapters of the book, and it is pointed out that the younger the child the greater are the chances of the infection becoming active. Contrary to the belief of some authors, Ribadeau-Dumas maintains that even in very young infants the real commencement of the disease and the seat of pathological lesions are to be traced to the lungs.

This little book has no other ambition than to familiarize the general practitioner with the method of immunizing the infant suspected of tuberculosis at the earliest possible period. In this he follows the footsteps of Calmette, Guerin and Weill-Hallé. He prescribes for the infant two milligrams of the bacillus BCG at three different periods during the first nine days of its life; that is to say, on the third, fifth and seventh, or the fifth, seventh and ninth days. He instructs the nurse to give these two milligrams on those days half an hour before she puts the child to the breast of the mother. It is desirable that the stomach be as near empty as possible for the administration of the bacilli. This method of immunizing has proved to be without danger or complication, but the vaccination should of course never be performed without the consent of the parents. The experiments have been controlled with the help of cutaneous reactions and showed, after injection, 88.7 per cent. of cases negative and 11.3 per cent. positive. It would seem that unless the tuberculous mother is willing that the child should be taken from her immediately after confinement, this method would give the greatest possible chance of safeguarding it against the development of tuberculosis. If this immunization of the suspected infant should prove to be in the long run what the authors of the method claim for it, we may look for a still greater reduction in the morbidity and mortality of tuberculosis than we have already obtained.

SYPHILIS

Modern Aspects of Syphilis. By M. J. Horgan, B.A., M.B., B.Ch., B.A.O., N.U.I. London: Henry Frowde and Hodder & Stoughton, 1924. Pp. 136.

In this highly practical little volume the author has gathered together the latest views concerning the nature of syphilis and its treatment, based on the lectures of Kyrle, of the Vienna school, including the study of the cerebrospinal fluid and the case sheets of patients in Finger's clinic.

In the foreword, written by Finger, he emphasizes the fact that his clinical teachings are distinguished more than anything else by the stress laid on the relations of the cerebrospinal fluid in syphilis. The volume under review strongly corroborates this statement. The major part of the book is devoted to this subject. In point of fact, the key to the successful understanding and treatment of the disease is declared to be found in a thorough study of the spinal fluid and its treatment.

There are excellent chapters on the pathology of syphilis, in which it is emphasized that the treponema is not a blood parasite but a tissue parasite; that the tissues of the body are quickly invaded, and that the blood merely acts as a medium for the infecting organism to reach the tissues, where proliferation takes place and anchoring of the parasite occurs. Because of this, Finger holds that the blood Wassermann is of secondary importance as compared with the spinal liquor reaction. The liquor should be tested at various times during the treatment, and in all cases there should be a systematic search for liquor changes in the second or third year of the disease.

Salvarsan and mercury continue to be the mainstay of treatment, but they should be administered in adequate amount. Where salvarsan cannot be given in full doses and over an extensive period, it is advised that older methods be adhered to. No salvarsan treatment is considered better and safer than treatment with half courses and "chopped up" courses of salvarsan.

The author stresses the importance of the body resistance to the invading organism, as an important factor that must be reckoned with at all times. To increase this resistance various methods are dis-

cussed, particularly Kyrle's method of nonspecific therapy, in which injections of milk are employed. These are considered valuable adjuncts to the regular treatment. A two per cent. iodine preparation (mirion) is recommended for the same purpose. The malaria treatment in conjunction with specific remedies is advocated for late syphilitic manifestations; and it is stated that Kyrle is achieving gratifying results in the treatment of early syphilis by a combination of malaria and specific therapy.

The simultaneous intravenous injection of salvarsan and a one per cent. solution of corrosive sublimate (Linser's method) is highly recommended for the simultaneous administration of salvarsan and mercury. It is said to be highly effective and never inconveniences the patient.

Typographically the volume is all that could be desired. It may be said to be unique in that it presents no illustrations, something to be grateful for at times. It is a most interesting and useful work.

La Sifilide ignorata e strana. Seconda Edizione con figure e tavole a colori. By Prof. Carlo Martelli, Docente di Anatomia Patologica e Clinica Medica nella Università di Napoli. Napoli, Casa Editrice Libraria Vittorio Idelson, 1923. Pp. xxiii, 642.

The second edition of this authoritative work sets forth in a very full and clearly arranged manner the many forms in which syphilis reveals its invasion of the organism. It discusses with particular emphasis those concealed and mistaken inroads which do not appear under the typically accepted manifestations. It reviews the pathology of the disease, its general pathogenesis, and deals with the authority of wide experience with the question of immediate diagnosis and treatment of the primary illness and then the necessity of determining in which of the many possible directions the patient may show tendency to further effect of the infection. The treatment must not be chosen or followed arbitrarily but with a watchful heed to the indications of the particular case and to the particular form of manifestation. None of the widely extended ravages which the disease may make upon the organism, direct or indirect, through heredity or as a secondary, tertiary, quaternary development, is permitted to escape discussion. A full bibliography of contemporary authorities is appended.

HEREDITY

The Inheritance of Mental Diseases. By Abraham Myerson, Professor of Neurology, Tufts College Medical School. Baltimore: Williams & Wilkins Company, 1925. Pp. 336.

The spirit of the author of this book has led him into a method of presentation that makes controversy a truly scientific exercise. He has fearlessly attacked old favored conceptions and yet always with a candid apology for any undue harshness and an absence of dogmatic conviction in his own views. His exposure of the hollowness of the insanity fiction and his redefining of psychiatry to show that it is not exclusively a science of mental diseases, are examples of the service he renders merely in clearing away the heavy mists which prevent correct thinking. In his further attack upon the acceptance of the concept of heredity, especially in relation to mental diseases, and upon the type of work set forth to uphold it, there is room for agreement or disagreement. Therefore the author's method of detailed investigation, the use of actual clinical material, cited with judicious conservatism in illustration and interpretation, his attempt to break up the misleading grouping of facts by homogeneous abstractions instead of by examining them in all the differences of varied manifestation, mental and physical; these all enlist the reader's own spirit of actual inquiry and offer a challenge in the face of his too ready acceptance of ideas long handed on and seemingly supported by a mass of data. Much of the latter Myerson believes unscientifically collected and applied. Moreover, the data are used to uphold a conception of heredity which has artificially isolated the word from the facts of medicine. It has not regarded the varieties of manifestation arising out of many causes, largely exogeneous, which cannot be grouped together on one basis of "neuropathic constitution" or what not. The facts which Myerson brings forward show such a range of incidence, even of definite disease entities, that the assumption of hereditary derivation from neuropathic stocks finds little ground. Transmission of mental disease from generation to generation he does not deny; his emphasis, however, is upon blastophoria, or injury to the germ plasm, an environmental phenomenon, which is transmitted and may tend in either direction, that of betterment and disappearance of the injury or that of deterioration and extinction of the stock.

SURGICAL CLINICS

The Surgical Clinics of North America. Volume IV, No. 6, December, 1924. Clinic of Frank H. Lahey, M.D., Boston. Index Number. Volume V, No. 1, February, 1925. New York Number. Philadelphia and London: W. B. Saunders Company, 1925.

The Lahey clinic number of this series of well known publications covers the ground of toxic goitre most thoroughly. Of the seventeen clinics presented in this volume, by eight authors, eleven are devoted to the subject of the thyroid, its surgery and its complications. Dr. Lahey himself contributes six very interesting clinics, ranging from the evolution of a thyroid clinic to the treatment of duodenal fistulæ by suction.

The multiple stage procedures, the plan which has been adopted by Dr. Lahey and his associates, are fully detailed and explained. These procedures consist of various steps or blocks, each of which may be considered a measure of progress, and each to be completed in the doubtful cases as a single procedure. The next step is taken only after the effect of the first has been noted and the probable effect of an advance through the next block seriously considered. The patient is returned to bed, the effect noted, and if the reaction be not unduly severe, the next step is completed within two or three days. Seven steps or blocks in the road towards subtotal thyroidectomy are thus outlined and fully described.

In support of these "block" procedures, it is stated that during the past three years a total of 1,376 operations have been performed on 976 patients at the clinic, with but seven deaths. In a group of 1,258 cases in which operation was performed, 583 were primary hyperthyroidism with a mortality of 1.7 per cent.; 320 were secondary hyperthyroidism, with a mortality of 2.1 per cent.; and the remainder were

nontoxic goitre, with a mortality of 0.51 per cent. The physician or surgeon interested in goitre will do well to study this interesting volume.

The New York number offers thirty-five clinics by thirteen well known New York physicians and surgeons. The subjects treated have a wide range. The first clinic is by Pool on exophthalmic goitre, followed by an excellent clinic on the surgical cure of gastric and duodenal ulcer by Berg, of Mount Sinai; Beer, of the same hospital, contributes a series of interesting articles, mostly urological in character, with a demonstration by Edelman, one of his associates; Furniss presents the subject of urinary incontinence in women, and Wood, of St. Luke's, offers a survey of röntgen therapy. Lilienthal's dry clinic on surgical diseases of the thorax is extremely interesting; one of his cases is that of cervical sympathectomy for angina pectoris, and while the end result is still uncertain, both patient and surgeon appear to be hopeful of lasting benefit.

The volume presents the usually attractive form and constitutes an invaluable addition to the long list of volumes which have preceded it in the series of *Surgical Clinics.*

ENVIRONMENT AND GENIUS

The Constant Nymph. By Margaret Kennedy. Garden City: Doubleday, Page & Co., 1925. Pp. 344.

The language of music is not so different from the speech of other muses. At least, Miss Kennedy permits it to ring with utmost clarity and comprehension to both lay and professional minds. And the psychology of the musician is comparable, for all his sought after individuality, to the psychology of most creative thinkers.

The story of *The Constant Nymph* shows primarily the struggle on the part of creative effort to establish its "difference," its genius, its isolated significance. There is a beautiful picture of the seething unbalance between childlike reaction to the world's laws, and mature production of a man's finest work. This lack of inner harmony is a recognized earmark of art in every form. An artist has something to say. The secret turmoil makes the need of expressing himself greater. As yet no novelist has pictured the coordinated artist. His productivity would be unbelievable, inhuman. More people than not have little to say. The artist is after all but a human brother. He must pay, to interest the reader, a heavy price of conflict for his intellectual, creative superiority.

Sanger is the type composer, immense, volcanic, unrepressed, a secret worshipper of his own genius. Not that that detracts from the genius in any way. It merely allows him to do as he likes quite childishly. He has irresponsibly accumulated a family. He dies, leaving the family destitute. Relatives, plans, the outside world, rush in to tamper as they love to do with the property of a great man. Necessary of course—the children are under age. In marvellously sensitive fashion the ordering of Sanger's children's lives is laid bare, the constant "it is for the best" dogma of the bourgeoisie running counter to every known law of personality and promise. Sanger escaped the mob; his gifted children shall be made to pay!

The most gifted of all is Tessa, in that she is not overdeveloped on any one side. Naturally her struggle is the greatest. The others, even as children, have some strong bent that will lead them in spite of themselves. Tessa, at sixteen, is a vibrant human being, faced with the necessity of annihilating her personality. Tessa's genius is for living, and she is not allowed to live.

Further complications of the plot. Lewis Dodd, the musician whom Tessa has loved since childhood, marries the distant cousin who makes it her mission to "bring up" the Sanger children. She is always "bringing up" someone or something. Like most uplifters she is convinced of her altruistic aims, whereas selfglorification is at the root of her whole hard being. A purely noncreative force bearing down with merciless concentration on two productive beings; the result, an intolerable situation that resolves itself tragically and truthfully.

Of the writing of the book little need be said. It speaks for itself—it is wholly unobtrusive, one absorbs rather than reads, one hears and lives and feels, rather than sees. *The Constant Nymph* pictures life —for the moment in a musical circle—as fascinating, as terrible, as blindly carefree and selfish as life really is. While for our comfort we are permitted to reason that this is not necessarily your life or mine, but nevertheless some slice of life worthy of sympathy and recognition.

FICTION BY A PHYSICIAN

Sea Horses. By Francis Brett Young. New York: Alfred A. Knopf, 1925. Pp. 321.

Francis Brett Young has given us refreshing fare in novel forms before. His last book is no exception. He seems to delight in choosing time and place for his dramas quite out of accord with regulation. A sea voyage to an African port, a woman and child taken out of pity as passengers on a cargo vessel, a mysterious goal! All quite enough to keep captain and crew unrestful. They arrive. Instead of resolving themselves, the mysteries grow more impenetrable. Life moves in a sort of miasmic haze. Vast gestures are made under circumstances so sordid and dispiriting that they are not gestures any longer but reflexes of discomfort. There is endless traffic back and forth from the town to the swamp where the woman's husband lives. Each time it is the same, hideous. Each time it is more overwhelmingly different. Some hint of an extrahuman power breathes over the landscape—an atmospheric dragon, a cosmos living, acting, regardless of our infinitesmal cosmos. The dragon rumbles, flicks his tail, knocking the groves pell mell, belches, goes on about his business. On the graceful ship the tiny puppets push on with their loves, their torments, the intrigue of the harbor town. The war reaches its crisis, the atmosphere begins to vomit trouble and the beautiful ship stealing out of the maws of the *Caballos de Marinhos,* the dread Sea Horses that guard the roadstead, runs aground. These little humans are too annoying! The dragon is sick of them. A lurch, a shrug, the story ends.

Sea Horses has vigor, novelty. It is thoroughly well done. Francis Bret Young in his personal reaction to his medium has again achieved originality.

Medicoliterary Notes.

Mussolini, the Italian dictator, is now reported to be writing a play, which he has asked a leading actress to produce in America. If this is true, it adds one more accomplishment to the long list of those of the versatile statesman, who, it is said, is an able player of the violin, has written a novel, attained success as a journalist, and has played parts in private theatrical performances.

* * *

If there is anywhere in the world an exception to the rule that people get the government they deserve, it is surely to be found in China. There, while the people have cultivated for centuries a natural genius for the arts of peace, the government has been frequently incompetent beyond the nightmare dreams of the West. General Hsu, the leader of a mission sent over by the present Peking government to examine European and American ways, puts forward a quaint new explanation of this paradox. He complains that cabinet meetings in earlier times were held at daybreak, whereas now they are only held as late as noon. Perhaps if the rival soldiers who now dispute for supremacy in China could be brought together at dawn, they might reach some agreement helpful to the country.—*Manchester Guardian Weekly.*

* * *

Announcement has recently been made that the Physicians and Surgeons Book Company, publishers of medical works, is about to enter the field of general literature and has formed for this purpose a subsidiary company to be known as the Capitol Book Company. The first publication of the new company is the novel of James Clark Bennett entitled *Shedding the Years,* described as "a thrilling tale of modern life and rejuvenation."

* * *

That bees may be relied upon to do the work of constables, and do it efficiently, was shown the other day at a village inn in Prohnsdorf, Prussia. When a free-for-all fight developed among the patrons, with amateur pugilists belaboring each other, the landlord, to save his tables and chairs from being smashed, rushed out and brought back a beehive. After putting on a mask he released the bees. The industrious insects did their work swiftly and thoroughly, and within a minute every one of the combatants had fled from the battlefield.—*New York Times.*

* * *

The column, Notes for Bibliophiles, edited by Leonard Mackail for Books, literary supplement of the *Herald Tribune,* contains in the issue for June 28th an interesting article on Dr. John Shaw Billings. The information is based on two lives of Dr. Billings, namely, that by Dr. Fielding H. Garrison entitled *John Shaw Billings, a Memoir,* and the recent book by Henry M. Lydenburg, chief reference librarian of the New York Public Library, entitled *John Shaw Billings, Creator of the National Medical Library, and Its Catalogue, First Director of the New York Public Library.*

* * *

The mental health survey of Staten Island, conducted by the National Committee for Mental Hygiene, has recently been completed and an outline report is given in the issue for May of the *Mental Hygiene Bulletin.* Some of the outstanding features of the survey were the discovery of the large number of children in need of mental hygiene service, the inaccessibility of facilities for the treatment of mental health problems, and the discovery of what seems to be a thyroid district that is dependent upon the local water supply.

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Another announcement of interest in this issue of the *Bulletin* is that of the opening of a demonstration child guidance clinic in Philadelphia. The quarters now occupied by the clinic staff consist of a completely renovated three story house owned by and adjoining the Children's Hospital. This hospital is cooperating closely with the clinic and will furnish medical and laboratory facilities for the clinic's patients. The demonstration was invited to Philadelphia by the All-Philadelphia Child Guidance Clinic Committee, of which Dr. Charles H. Frazier is chairman.

On May 5th the famous old Italian University of Pavia, probably the oldest college in the world, celebrated its eleventh centenary of the primacy over other scholastic institutions in Italy awarded it by Lothaire, grandson of Charlemagne, in 825 A.D. Names famous in the history of medicine connected with this institution are those of Antonio Guancaio, Giovanni Matteo Ferrari, and Girolamo Cardano, philosopher as well as physician.

* * *

The *Yale Review* for July has some excellent articles, among them one by Elmer Edgar Stoll entitled Of Dogs. Mr. Stoll sings the praises of dogs in general and in particular of the bright little Maltese terriers. Other interesting features are The Connoisseur, by Walter de la Mare; War Risks in Economic Conflicts, by Sir Arthur Salter; Law and Literature, by Benjamin N. Cardozo; Charlotte and Emily Brontë, by Herbert Read; Sex and Genius, by Alice Beal Parson; and New Letters About Poe, edited by Stanley T. Williams.

* * *

The British press announces that Sir James Barrie has prepared with great pains a film version of his play, *A Kiss for Cinderella,* and has again cast Betty Bronson, the screen Peter Pan, for the leading part. It is estimated that it will take several months to complete the film. *Dear Brutus* is also being prepared for the movies.

* * *

A campaign to prevent accidents to children has recently been inaugurated by the American Museum of Safety in cooperation with the New York State Department of Labor and the Board of Education. These agencies will work chiefly through the heads of the evening and continuation schools. The campaign is the result of a report by the State Department of Labor showing that in one year 1,983 children were seriously injured while at work in New York factories.

* * *

One of the leading features of the *North American Review* for June-July-August is a symposium on Five Years of Prohibition and Its Results. The discussion is carried on by William H. Sayton, Henry Samuel Priest, George Gordon Battle, Henry Bourne Joy, James P. Holland, Dr. Charles L. Dana, Oscar Terry Crosby, Samuel Harden Church, Lawson Purdy, and John Philip Hill. All are opponents of prohibition. In the next issue of the *Review* will be a symposium presenting the opposite side. Other features of interest are Reminiscences of Huxley, by Henry Fairfield Osborn, and The Future of Leprosy, by Dr. Victor G. Heiser.

* * *

Good books for summer reading are *St. Mawr,* the story of a stallion, by D. H. Lawrence (Knopf); *Stolen Idols,* a mystery tale by E. Phillips Oppenheim (Little, Brown); *Sea Horses* by Frances Brett Young, a romance of the sea and Africa; *The George and the Crown,* one of Sheila Kaye-Smith's Sussex tales; *The Constant Nymph,* by Margaret Kennedy, "the most popular novel of the year"; *Mrs. Dalloway,* by Virginia Woolf, a story of life in London; *The Mother's Recompense,* by Edith Wharton, in the authors usual style; *The Great Galsby,* by F. Scott Fitzgerald, the story of an attractive, mysterious young man of great wealth who keeps open house; *In Zanzibar,* by the late Ralph D. Paine, the story of one thrilling night and the crew of a U. S. cruiser; *The Carolinian,* by Rafael Sabatini, an adventure story of the time of the American Revolution; *Thus Far,* a mystery tale by J. C. Snaith; another by Caroline Wells, *Face Cards;* others, *The Seine Mystery* by Cleveland Moffett, the *Mystery of Redmarsh Farm* by Archibald Marshall, *The Uninvited Guests* by J. Jefferson Farjeon, *The Annexation Society* by J. S. Fletcher, *The Missing Initial* by Natalie Sumner Lincoln, *Black Shirt* by Bruce Graeme, *The Red Lamp* by Mary Roberts Rinehart, and *Afterwards* by Mrs. Belloc Lowndes. For pure fun read Webster's *Poker Book, Here Comes the Bride* by Irvin S. Cobb, *Bigger and Blacker* by Roy Octavius Cohen, *The Crazy Fool* by Donald Ogden Stewart, *What of It?* by Ring Lardner, and *The Glimerick Book* by Shaemas J. A. Witherspoon. For travel choose *So You're Going to Italy* by Clare E. Laughlin, *Carpenter's World Travels* by Frank G. Carpenter. *The Adventure of Wrangel Island* by Vilhjalmur Stefansson, *The Lost Oases* by A. M. Hassanein Bey, and *Six Years in the Malay Jungle* by Carveth Wells.

Abstracts from Current Literature

DERMATOLOGY AND SYPHILOLOGY

Malaria Treatment of Syphilis.—J. Kyrle (*Wiener klinische Wochenschrift,* October 23, 1924) observed some excellent results in the malaria treatment of cases of latent syphilis with cerebrospinal fluid changes. Although not all the pathological cerebrospinal fluids in chronic cases could be brought to normal, the lymphocytosis could usually be made to disappear. No failures were observed when the treatment was instituted within a year of the infection. Of 205 patients treated with one course of arsphenamine malaria arsphenamine treatment, clinical recurrences were observed in only three. Treatment was given also when the cerebrospinal fluid was normal. The author found the results with one such course of treatment superior to all other forms of treatment.

The technic is as follows: A course of 3.0 grams of neoarsphenamine within four weeks is followed by the malaria treatment. During or after the eleventh week, 0.5 gram of quinine is given intravenously, and this dose is repeated in eight hours. On the following day, 0.45 gram of neoarsphenamine is given, and within the next twenty-four hours this is followed by two injections of quinine, eight hours apart. The treatment is then continued with neoarsphenamine, again giving 3.0 grams in four weeks.

Even though two patients died, the author does not consider heart disease a contraindication. The patients, however, should be selected. No recurrences of malaria were observed. It appears that patients who are intolerant to arsphenamine before being infected with malaria, are more tolerant of it afterward.

Antiseptic Lotions, Baths and Dressings in Skin Disorders.—F. Babzer (*Paris médical,* February 28, 1925) asserts that antiseptic lotions may be of marked prophylactic as well as curative value in numerous skin affections. In the various eruptions of pyogenic origin, lotions of potassium permanganate, zinc or copper sulphate, or mercury bichloride, often are decisive in their effects. Recurring furunculosis is checked by repeated antiseptic applications to the skin. Dressings with relatively strong—one or two per cent.—solutions of permanganate are useful in infected lupus. In extensive chronic eczema, scaly and itching, in which secondary pyogenic infection always exists, as well as in seborrhea and seborrheic or mycotic eczema, one or more weak permanganate baths afford marked relief and facilitate the action of the other topical medication employed. In psoriasis, occasional disinfecting baths are useful chiefly to prevent the pyogenic dermatitis which sometimes proves disturbing during treatment with oil of cade or other tar preparations. During mercurial or arsenical treatment in general there arise erythemas and erythrodermias, primary or secondary, which are often accompanied by various kinds of pyogenic lesions, arising either through added local infection or from the germs already at the skin surface previous to the onset of the erythema. This complication may so progress as to produce serious cachexia and even death. There is therefore great advantage in the use of permanganate baths from the onset of the erythrodermia, to prevent the more or less obstinate and serious pyogenic complication. The baths are also of curative value. In the intervals between them the aim should be to dry out the epidermis with, e.g., a mixed powder of talcum and zinc oxide. In exfoliative dermatitis of the new born, as well as in that of adults, antiseptic baths are useful; in obstinate cases, permanganate baths may be alternated with oak bark baths. In bullous skin disorders with secondary infection the antiseptic solutions used should be weak; in severe bullous cases, simple baths containing a decoction of oak bark—one kilogram to the bath—or with tannic acid may be used alone. In some forms of pruritus, notably the senile type, a bath containing sodium silicate may be ordered. In various other itching skin affections a bath to which one or two teaspoonfuls of an alcoholic menthol solution have been added is indicated both for antisepsis and to relieve the itching; with it may be combined a bath containing a few teaspoonfuls of spirit of camphor. In a case of acute generalized lichen the author had success with an emulsion of cod liver oil—100 grams added to the bath. In frost bite immersion in a two to five per cent. solution of calcium chloride has been recommended.

Syphilis as a Cause of Delayed Resolution in Pneumonia.—Thomas Fitz-Hugh, Jr. (*Medical Clinics of North America,* November, 1924) emphasizes the following points:

1. Syphilis is an important cause of what clinically is delayed resolution of acute pneumonia. It is more frequent than is generally recognized, and deserves a place in our textbooks along with effusion, empyema, lung abscess, pulmonary tuberculosis, and the other well known complications and sequelæ of pneumonia.

2. The report of a positive Wassermann test, made by a competent serologist, is indicative of syphilis even when the blood is tested during the course of an acute pneumonia. But a patient may have syphilis and empyema too.

3. A pneumonia patient, whose febrile illness is unduly prolonged by persistence of pulmonary pathology and in whose case empyema, abscess, and tuberculosis can be reasonably well excluded, should have the benefit of a Wassermann test. If this is positive the patient should have vigorous antiluetic treatment. The therapeutic test completes the diagnosis, from a practical point of view at least.

4. In addition to the "diagnosis by exclusion," supplemented by the Wassermann test and the therapeutic test, the complete diagnosis would seem to be suggested by the following: Rapidly changing physical signs elicited over the involved lung tissue, which one day might seem to be the site of massive effusion and the next day clearly in a state of marked consolidation with loud tubular breathing and succulent râles; evidence of visceral syphilis in other organs, e.g., an unduly enlarged and tender liver; history indicative of syphilis; the x ray picture.

5. Finally it is suggested that if syphilis is constantly borne in mind by all who have to treat pneumonia, this complication will be recognized and combatted at an early stage, when gratifying results can be obtained. It seems probable that by early treatment of this form of delayed resolution some patients will be spared the indelible lung scars that in after years would surely be dubbed syphilis of the lung.

Treatment of Psoriasis.—Leo Kumer (*Wiener klinische Wochenscrift,* September 4, 1924) states that the various forms of psoriasis and their special localizations require an individualizing treatment.

The most severe form, the universal psoriasis, requires the mildest form of therapy. The author places such patients in a water bath to which is added in the beginning redium emanation in a high dose (500,000 Mache units); it is surprising how rapidly the symptoms disappear with this measure. As soon as improvement is observed, the further progress is aided by the addition of Vleminckx's solution in small doses (10 to 150 gm.). Of salves, only the indifferent unguentum simplex or a weak sulphur vaseline is indicated in the severe form.

In all acute cases still in the progressive stage (those showing small single efflorescences, only the centers of which are covered by scales) the best results are obtained at first with the most bland form of therapy, such as baths and sulphur salves. Arsenic, particularly is contraindicated in such cases.

Stationary, inveterate foci require tar bath and pyrogallic and salve treatment, or chrysarobin, and if this is not successful roentgenotherapy should be tried. Internal treatment, with remedies that are not always entirely harmless to the organism, is indicated only in exceptional cases. Psoriasis of the hairy parts disappear rapidly; treatment with five per cent. white precipitate or sulphur salve is usually sufficient, but with very extensive areas, with marked deposition of scales, as in universal psoriasis, a preliminary application of oil for the removal of the scales is helpful. The areas on the face also react favorably to a mild therapy. In contrast to this is psoriasis of the hands and feet and also the isolated areas on the knees, the elbows and over the sacrun, which are very obstinate and require energetic treatment. These cases respond very well to the painting of such areas with concentrated oleum rusci and a covering with a ten per cent. salicylic acid soap plaster, followed by a second application in two to four days. This form of treatment is also indicated in the extraordinarily obstinate psoriasis of the nail; if it fails, radium irradiation should be tried.

Formaldehyde in Epithelioma of the Face.—O. Laurent (*Bulletin de l'Académie de médecine,* January 20, 1925) recommends formaldehyde injections in cases of epithelioma of the face in which operation is deemed too mutilating and radiation fails. Three patients thus treated fourteen years ago are still living. One had a vegetant epithelioma involving almost the whole of the left side of the nose up to the eyelid, and healed in three months under the formaldehyde treatment. In another, a third of the lower lid had been eaten away, but complete healing gradually took place under formaldehyde, although the lesion had been resistant to radiation. Two more recent cases had had four radiation treatments without benefit, but formaldehyde healed them in eight weeks. A radiologist found the remedy valuable for fissures and scabs on his hands. The drug is injected at various points at the base of the diseased area, one drop at each point, or sometimes applied directly. In early cases a single treatment may suffice. Practice with the procedure makes it possible to limit the necrobiosis to a minimum, i.e., to a scab covering the ulcer, and thus at times to procure healing more rapidly than by radiation. As the drug does not have the selective properties of radiation, no marked differences in its curative effects were noted between precancerous lesions, senile keratosis, senile multiple epitheliomatosis, flat cicatricial epithelioma, spinecelled epithelioma and rodent ulcer. The drug is, in the first place, bactericidal; it also fixes and mumifies the protoplasm and, in particular, the nuclei undergoing mitosis; it tends to vitalize the connective tissues, impaired by the malignant growth, and probably also to vitalize the epidermis. In addition, it induces a phagocytic reaction, powerful or slight according to the amount used.

Erysipelas Successfully Cured by Subcutaneous Injection of Cow's Milk.—Thomas A. Lebbetter (*Canadian Medical Association Journal,* December 1924) presents the following summary of his paper: The rise in the temperature which follows the injection of cow's milk possesses a curative effect in the treatment of erysipelas. Antistreptococcic serum is expensive, uncertain in its action and not always available for immediate administration. Besides, to get the full effect of this particular method of treatment one needs to give concurrently an autogenous vaccine which is difficult to procure without considerable delay. Foreign protein (cow's milk) is cheap, simple to prepare, and within the immediate reach of every general practitioner. It eliminates the delay of waiting to procure serum and autogenous vaccines and facilitates a rapid uninterrupted recovery. It has proved in our experience a rapid economical and positive factor in the immediate cure of erysipelas. In the twelve cases treated of the eleven patients who had been seen early before the fifth to the seventh day of the disease, four had the temperature reduced to normal and all other symptoms arrested within twenty-four hours of the first injection; four had the temperature reduced to normal and all other symptoms arrested within forty-eight hours of the first injection; and three had normal temperature and all other symptoms arrested within seventy-two hours of the first injection of the foreign protein.

Seborrhoic Dermatitis.—Herman Goodman in his article entitled, "Loss of Hair from Common Causes," recently published in the *Boston Medical and Surgical Journal,* discusses the etiology and appearance of seborrhoic dermatitis. He writes that the condition may develop from other apparently milder forms of scaling of the scalp. The condition of the scales and the underlying scalp may not appear very much different in eczema seborrhoicum than in pityriasis steatoides, but the presence of a similar more or less superficial red scaly greasy condition of the skin distant from the scalp, in favored locations, as the middle of the chest and back, and the flexors, leads to the diagnosis of the seborrhoic condition rather than the pityriasis. The lesions of the skin may be attributed to chance infection from the groups of organisms affecting the scalp, but unless the soil is favorable seborrhoic eczema does not develop. In this condition, as with practically all the others considered, the general condition of the patient cannot and must not be overlooked in consideration of the treatment of his affection. A trip to the country for city people, relief from tight or ill fitting hat gear, diet, exercise, all have their place in the therapy. A review of the chemical constituents of the blood or urine may reveal a fault of the organism, the correction of which gives relief. Seborrhoic eczema certainly and surely leads to loss of hair. Ordinarily much worse in men, and usually, in the early years of adult activity, seborrhoic eczema untreated, or even treated, causes the loss of hair typified by the extraordinarily high forehead and the fringe over the ears. Incidentally, when the hairs have all gone, the seborrhoea goes with them, as far as the scalp is concerned. Baby or lanugo hairs may take the place of the adult or true hairs which have fallen, but this should not be taken as a good sign prognosticating the return of adult hairs. Rather, the reverse should be feared. According to living habits, occupation, etc., the condition of the skin associated with eczema seborrhoicum of the scalp may be evanescent or persistent; easily eradicated, or resistant to therapy.

Hop Dermatitis.—W. J. O'Donovan (*Lancet,* September 20, 1924) states that in a characteristic case of plant poisoning the hands, face, and genitals are covered with closely placed minute vesicles and bullæ on an erythematous base. There is often considerable tumefaction. The eruption is often mistaken for erysipelas, but its appearance in gardeners should lead to careful inquiry as to the possibility of plant poisoning. Females only, so far, have been affected, from the ages of twelve up to sixty-seven, always in the month of September. The eruption is severe and recurs rapidly on reexposure. The diagnoses that have been so far suggested, before the occupational etiology was appreciated, were impetigo, erysipelas, hydroa, and urticaria.

A Clinical and Experimental Investigation of Arsphenamine Poisoning.—Soma Weiss (*Proceedings of the New York Pathological Society,* January-May, 1924) used cats to study the gross and microscopic tissue changes produced in the liver, spleen, and kidneys by arsphenamine, by arsphenamine combined with mercuric salicylate, and by arsphenamine administered after chloroform. Repeated doses of arsphenamine, corresponding to massive therapeutic doses, produce small areas of necrosis, fatty infiltration, congestion with round cell infiltration, and occasionally cloudy swelling in the liver cells, with the evidence of fatty degeneration in the tubules of the kidneys in some cases. The poison produced no changes in the spleen. The tissue injury was not increased or modified when arsphenamine was combined with mercuric salicylate, in amounts corresponding to therapeutic doses in man. When the doses of arsphenamine mentioned were administered to cats in which liver injury had been produced by chloroform, the liver regenerated at the same rate as that in the series of cats which received chloroform alone. Arsphenamine, therefore, does not appear to increase the injury produced by chloroform. The histological changes and the behavior of the poisoned animals did not correspond to those observed in acute yellow atrophy of the liver in man. In twenty-one of twenty-nine human fatalities due to arsphenamine, death followed the injection of the drug in a few hours. In seventeen cases in which autopsy was performed, the liver showed no pathological changes, but the cases all showed severe chronic pathological changes in other organis. It is concluded on the basis of these studies that the majority of fatal accidents can be prevented by observing caution in individuals who show cardiovascular and renal disease, clinical evidence of status lymphaticus, or acute infectious disease (pneumonia). Acute yellow atrophy of the liver cannot be attributed to a direct toxic effect of arsphenamine. However, as the close relationship between its administration and acute yellow atrophy is definite, the conclusion that arsphenamine plays an indirect rôle in causing acute yellow atrophy is inevitable.

Infantile Roseola.—Paul W. Beaven (*Archives of Pediatrics,* October, 1924) reports five cases of infantile roseola. This illness differs from the known exanthemata in that it is apparently noncontagious. Another cardinal point is the age incidence. In all of the cases reported, practically every one has occurred between the ninth month and the beginning of the second year. It also differs from all other exanthemata in that the defervescence is by crisis and has the further peculiarity that the crisis is attended by a typical eruption.

The onset is abrupt, with fever. The temperature is sustained for four days and is usually high. During this period there is nothing to explain the fever. The tonsils or pharynx may be red, and there may be a slight cough, but the lungs, ears and urine are negative. Leucopenia has been reported. Urine examinations are negative throughout. The temperature uniformly falls to normal on the fourth day and the rash then appears, usually first on the trunk. In a few hours, generally twelve to sixteen,

the eruption has reached its height. It covers the whole body, but the abdomen and upper chest and shoulders and neck are chiefly affected. Relatively few lesions are found on the face and extremities. The separate lesion is a pale rose red or slightly pinkish macule or maculopapule about 0.5 cm. in diameter. Usually in twenty-four hours after the height of the rash is reached, the eruption has entirely disappeared. Occasionally there is desquamation. There are no complications.

The differential diagnosis includes German measles, scarlet fever, drug eruptions and food idiosyncrasy. There is little doubt but that this syndrome is a clinical entity and should be so recognized. It is probable that the disease has existed for a number of years, but that it has been classed among the unexplainable eruptions of infancy.

GENECOLOGY AND OBSTETRICS

Dysmenorrhea in Young Women.—A. E. Sanderson (*British Medical Journal,* September 27, 1924) applies the term "dysmenorrhea" when menstruation is attended by any kind of suffering on the part of the woman; normal menstruation is not associated with any symptoms. Of 2,050 girls questioned seventy eight per cent said they were normal, and twenty two per cent had various degrees of dysmenorrhea. In only five cases was spasmodic dysmenorrhea encountered.

It is generally believed that during the period of menstruation all forms of bodily exercise and bathing should be interdicted. The author believes that this is erroneous and that exercise and bathing should be carried on daily just as at other times. In fact, exercise will usually relieve such discomforts, and a period of inactivity even aggravates the symptoms. The baths should be the usual warm bath, but not cold douches or swimming. Athletic games, such as hockey, lacrosse, cricket, tennis, drilling, gymnastics, riding, cycling, or dancing should be continued throughout menstruation. Constipation should be combatted at this time. The continuance of bodily activity throughout menstruation is an excellent way of preventing dysmenorrhea.

Not only is exercise prophylactic against dysmenorrhea, but in most cases it can be even cured by exercise in cases where the dysmenorrhea has already existed for some time. Operation should not be performed, nor even suggested to the patient, until baths and exercise and drugs have been tried for at least six months and found useless. The treatment is largely a matter of building up the general health of the patient. Active, outdoor life is not always prophylactic against dysmenorrhea unless the activity is continued during the period.

The drug most usually prescribed has been ammonol. Extracts of ductless glands were not prescribed for dysmenorrhea itself, apart from abnormal periodicity, or flow, or other symptoms indicating disorder of endocrine secretion. In eleven successful cases small doses of thyroid extract, and in three cases a polyglandular preparation were given.

Dysmenorrhea in Young Women.—Leonard Phillips (*British Medical Journal,* September 27, 1924) observed about four hundred women without physical signs. All of these women had very definite and disabling pain, and all had been treated unsuccessfully by medical measures. An analysis of these cases shows the following points of interest:

The majority of the patients lead inactive lives and in one half of them constipation is a definite complaint. One third of the patients were poorly developed, with weak abdominal musculature, faulty posture and breathing, anemia and visceroptosis—the class so much improved by hygienic treatment. The variations in the site, time, duration, and character of the pain are very great, and, together with varied general conditions and local findings, suggest the possibility of several causative factors in dysmenorrhea, even though gross pelvic physical signs are usually absent.

Intrinsic dysmenorrhea begins at puberty and recurs at each subsequent menstruation. In some instances this is the case, but in a great number of cases menstruation is established painlessly, the dysmenorrhea developing several years later and for no apparent reason. Moreover, many women have painless periods alternating at intervals with painful ones. In such cases an organic or developmental fault cannot be adduced as the cause. There is, undoubtedly, a strong psychical element in some cases.

The results of operations for dysmenorrhea leave much to be desired, and in cases where dilatation, curettage, or anterior hysterotomy have failed, the patients can sometimes be subsequently cured or improved by nonoperative treatment.

A number of facts suggest the existence of an obstructive factor in some types of dysmenorrhea. True acquired stenosis of the cervix may follow amputation of the cervix. Anterior hysterotomy relieves the dysmenorrhea in such cases.

The younger the patient when first treated the better the results. Severe cases in patients over twenty five years of age are more difficult to cure, and those in women over thirty are usually intractable and constitute the bulk of the failures.

A moderate degree of arrested development of the pelvic organs is fairly common. There are two very suggestive facts in favor of an endocrine basis in some dysmenorrhea cases: 1, the well known association of dysmenorrhea with sterility; 2, the remarkable success of organotherapy in some cases. Patients who have long and irregular intermenstrual periods and a scanty flow sometimes derive much relief from combined extracts of ductless glands, especially thyroid, ovary, and pituitary.

Of two hundred patients subjected to operation, twenty five per cent. were cured, twenty five per cent. were improved, and fifty per cent. were left unaffected. Dilatation gives the best results in young women with central suprapubic spasmodic pain only, and when divulsion rather than dilatation is performed. Curettage gives the best results in married women, especially when menorrhagia is present or casts are expelled. Hysterotomy proves valuable in acutely anteflexed undersized uteri, especially with a clinical picture of an obstructive causal element.

Of the various forms of drug therapy, the coal tar antispasmodics with atropine, and with the addition of liqor sedans, gave the best results.

The insertion of radium into the uterus, with a consequent cessation of the periods, provides a simpler, safer, and yet equally effective alternative to hysterectomy in women in the thirties suffering from severe and intractable dysmenorrhea. An insertion of 100 to 150 mg. of radium for twenty four hours is usually sufficient. All the disadvantages of an operation are thereby avoided.

Suction Cup Treatment of Chronic Cervicitis.—Wilhelm Fernhoff (*Wiener klinische Wochenscrift,* September 11, 1924) asserts that in obstinate cases of chronic cervicitis, in which other therapeutic measures have failed, the suction treatment often gives good results.

The suction cups are made of glass, gently rolled up at the bottom, with a tube at the top, to which a rubber tube is attached. They are made in various dimensions to fit the different sized cervices. The cervix should fit accurately and the external os should remain visible and not lie against the wall of the cup. A suction syringe of 100 c. c. capacity is then attached and the air is exhausted. The rubber tube is clamped and the patient is left in this condition for five minutes. The os should be frequently examined to see that there is no extensive hemorrhage and that no pain is produced by this procedure. The cup should be applied warm. In due time a mucous plug is seen in the cup, followed occasionally by a little hemorrhage. The vaginal portion of the cervix appears swollen, bluishred, and the external os dilated, and an existing erosion becomes invisible. After removal of the cup the cervix is cleansed, wiped off with tincture of iodine or other antiseptic and a tampon is applied. During the suction procedure the patient may feel a slight drawing or a laborlike pain, which disappears rapidly after the cessation of the treatment.

The treatment is best given three times a week and for the duration of ten minutes. The subjective reaction of the patient needs watching. Previous to each treatment, the internal genital organs should be examined for the presence of any existing inflammatory process.

This form of treatment is especially indicated in cases of chronic cervicitis. It is also applicable to various forms of hypoplasia and atrophy, inveterate parametritis, especially in posterior parametritis, in which the ligaments are greatly relaxed by the resulting congestion. If the first treatment is painful, no further treatments should be given. Even the slightest chronic process in the adnexa is a contraindication. The treatment should not be continued longer than

two months. There may be a retardation or acceleration of the menstrual period, but this is only transient. This treatment may also be given for the emptying of punctured Nabothian cysts.

This form of therapy produces both active and passive congestion, both of which are more intense than with any other form of physical therapy. The congested tissue shows an enhanced power of dealing with infection. In addition mucus is removed from the surface of the cervix, allowing a more effective local medication.

Significance of Backache in Gynecology.—Robert Joachimovits (*Zentralblatt für Gynäkologie,* September 27, 1924) states that gynecological backache is often not due to abnormal female genitals, but to tuberculous or arthritic disease of the posterior portion of the pelvic ring, especially of the sacroiliac joint. Tuberculosis produces small abscesses ventrally, occasionally also dorsally, and sometimes also caries sicca. Arthritis follows trauma, especially trauma from birth; it also occurs in a tuberculous form with disturbances of nutrition and loss of elasticity in the cartilage and relaxation of the sacroiliac ligaments. Of the tuberculous and arthritic symptoms, only the pain on crossing the legs and tenderness of the synchondrosis on vaginal and rectal examination stand in the foreground. These conditions, that are demonstrable roentgenologically with great difficulty, were not associated with either mobile or fixed retroversion flexion.

Radial Pulse Volume and Radial Pulse Work During Labor.—Walther Haupt (*Zentralblatt für Gynäkologie,* October 25, 1924) shows that the radial pulse volume is distinctly diminished during labor pains in more than two thirds of the cases, and in some cases some of the individual pulse beats almost disappear. In the remaining cases there is an alternating rise and fall, and in only one case was the rise constant. Consequently, the pulse volume a minute is frequently not increased in spite of the increase in frequency of the beat, but it remains constant or even considerably diminished. The individual and minute work values behave similarly; nevertheless, the loss in size is relatively slight in both values, and occurs more rarely in the latter.

The effective factors in the rise of the pulse volume are the following: expression of the uterus, increased abdominal pressure, diminished thoracic pressure, muscular work, diminished resistance in the arterial field, and nervous influences; the reverse occurs with diminution of the abdominal pressure, increased thoracic pressure, increased peripheral resistance, and nervous influences; technical errors must also be taken into consideration. A particularly marked effect upon the diminution of the volume was noted from groaning and straining, which may be explained by the predominance of the thoracic pressure over the abdominal pressure.

Treatment of Pernicious Vomiting in Pregnancy by Gastric Lavage and Carbohydrate Rectal Feeding.—Stanley E. Denyer (*British Medical Journal,* September 13, 1924) summarizes the essentials of treatment in cases of pernicious vomiting in pregnancy as follows:

1. Rest in bed. 2. Gastric lavage, with solution of sodium bicarbonate one dram to the pint, one or two pints being used. 3. Solution of adrenalin, five minims hypodermically every three hours for a few doses until vomiting ceases, or the adrenalin solution may be given by the mouth in doses of ten or twenty minims in a little water. It will be found that this drug is efficient in stopping many kinds of vomiting. 4. The omission of all feeding by mouth, at first, and feeding by rectal salines containing from half an ounce upwards of glucose to the pint, with a small quantity of sodium bicarbonate added if there is any diacetic acid in the urine. 5. The addition to the evening salines of thirty grains of potassium bromide to induce sleep and reduce irritability of the nervous system. 6. The gradual increase in feeding by the mouth, beginning with small feeds of water.

In cases seen with progressively increasing severity of the vomiting, the oral administration of 1 in 1000 adrenalin solution in doses of ten minims in two drams of water at three to six hourly intervals will in many cases be sufficient to stop the vomiting. The diet at the same time should be light and given at short intervals. The treatment by lavage, outlined above, and rectal salines should be reserved for the more serious cases, or to those which do not respond to treatment by adrenalin.

Intrauterine Radium Treatment of Benign Gynecological Hemorrhages.—Gustav Halter (*Zentralblatt für Gynäkologie,* September 13, 1924) says he has achieved some good results with the intrauterine (not intravaginal) application of radium in eighty-nine cases of hemorrhage. He was able to produce amenorrhea sixty-four times and a diminution of the bleeding fifteen times. Vaginal applications are made only for carcinomata. Unfortunate accidents, such as the formation of hematometra, exudates, and pyosalpinx can be avoided by the observance of strict indications, namely, the palpatory and anamnesic absence of inflammations in the region of the genital system, and a most carefully maintained asepsis. Hematometra may be avoided by pushing the tube of radium up to the fundus; in this way agglutinations in the lower portion of the uterus and, especially, in the cervix can also be avoided.

In the hemorrhages of young persons, which have persisted in spite of all other methods of treatment, a weak intrauterine application of radium (but not over eight hundred milligram hours) can be made. If this produces no result the use of radium should not be repeated. In the preclimacteric and climacteric hemorrhages a dose smaller than that recommended by most authors (nine hundred milligram hours) is advised as slight menstruation seems to be more desirable than permanent amenorrhea. The possibility of injury to the ovum in a subsequent pregnancy in case that a permanent amenorrhea is not achieved must be borne in mind, but this danger is no greater than with röntgen rays. At any rate the treatment with radium should be used with great reserve in young women and in those of the childbearing age.

High Occipital Presentation in Eclampsia.—Rudolf Fischel (*Zentralblatt für Gynäkologie,* August 30, 1924) asserts that subcutaneous symphysiotomy is the operation of choice in medium grades of contracted pelvis in multiparæ, whenever there is protracted labor with a premature escape of the amnion and when it is certain or at least probable that the interior of the uterus is infected. This operation is preferable to Caesarean section and perforation. The same rule holds also in aseptic cases in multiparæ, where there is a contracted pelvis of medium grade. In primiparæ, under the conditions mentioned above, a suprapubic Cæsarean section is done. In infected primiparæ a perforation is done even on the living child.

Symphysiotomy is contraindicated in markedly contracted pelvis, as otherwise an injury of the joints and ligaments would occur; in irregularly contracted pelvis, as it is impossible to calculate the amount of space that would be gained by the separation of the bones, and in primiparæ, because of rigidity of the soft parts.

Suggestions in the Treatment of Puerperal Sepsis.—J. R. Campbell Canney (*British Medical Journal,* August 30, 1924) advances the following suggestions: When fever appears in the puerperium, having excluded maladies outside the pelvis which may cause it, it is safer to give an anesthetic and carefully examine the patient's pelvis than to "wait and see." If intrauterine sepsis is present, explore the uterus and take steps to empty it or clean it, or both. To wait and see if the fever will subside may mean waste of precious time. A socalled sapremia is quite often the precursor of the most virulent septicemia, and anyhow a sapremia will not be improved by leaving even small and removable fragments of placenta or membrane *in situ,* if they are poisoning the patient. The septic uterus will not involute, but the modified Carrel-Dakin treatment, assisted perhaps by drugs, will help involution better than anything at our disposal. If antistreptococcal serum is to be used, use it frequently until the temperature falls. Further adjuncts are "peptone shock" and intravenous eusol. Take a culture from the endometrium and from the blood, as a vaccine later may be of value, especially if prepared from the blood. Pay careful attention to posture in the nursing of these patients. Fowler's position will aid drainage, whereas the supine position will tend to dam back secretions. Similarly micturition and defecation in a complete sitting position are useful aids. In early infection of the adnexa, the modified Carrel-Dakin method may possibly precent the necessity of abdominal section, and will certainly speed up recovery. Where anemia or debility is caused by hemorrhage or toxemia keep a special lookout for sepsis. Perform all manipulations or instrumentation with extreme gentleness whenever possible, and practice asepsis most punctiliously. Sew up all tears of soft parts immediately.

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Medicolegal Notes.

PRIVILEGED COMMUNICATIONS—NURSES AND ARMY SERGEANTS

The Nebraska Supreme Court holds, Culver v. Union Pacific R. R. Co., 199 N. W., 794, that a professional nurse assisting a physician to whom confidential communications have been made by a patient is an agent of the physician. She stands in the same relation of confidence to the patient and may not be permitted to testify to such communications unless the privilege has been waived by the patient.

A sergeant of the United States Army Medical Corps, who is not a physician, who acts under the regulations of the army in furnishing to soldiers medical or prophylactic treatment for venereal diseases, and who does not fall within the rule as to assisting nurses above stated, may, the Nebraska court holds, testify to the fact that application was made to him for such treatment, and as to the nature of the service rendered by him, where such facts are material to throw some light on the question at issue.

NEGLIGENCE DURING AND AFTER ETHERIZATION NOT PROVED.

Actions were brought against a physician and a dentist for damages for personal injuries alleged to have been caused by their negligence. The Massachusetts Supreme Judicial Court, Cross v. Albee, 145 N. E. 45, said that it was the duty of the defendants in the practice of their respective professions to possess a reasonable degree of learning and skill and to exercise ordinary care and diligence. As stated by the court in its opinion, affirming a judgment on a directed verdict for the defendants, the physician was specially called to administer ether to the plaintiff, whose uncontradicted statement was that she was then in perfect health. The plaintiff fully understood he was not employed as a general practitioner to prescribe for her ailment and become her attendant physician, or to provide necessary nursing because of her alleged enfeebled stated caused by and following the extraction. No evidence was offered on which the jury would be warranted in finding that etherizing a patient to produce insensibility to pain arising from the extraction of teeth "is a serious and dangerous operation," or that "to make the treatment reasonably safe and successful required a careful diagnosis and chart of the patient's previous health, constitution and susceptibility, and a reasonable preparation and regulation of the same before the ether application." The plaintiff called the defendants as witnesses. If they were believed by the jury, the court held, no lack by the physician of the use of adequate medical knowledge or of professional skill was shown. If they were disbelieved the remaining evidence was held insufficient to warrant a finding of causal connection between any negligent act of the defendant and the physical ills from which the plaintiff contended she suffered after the operation.

There was no evidence to show that, as alleged, a proper pack was not used to prevent blood from going down the patient's throat during the operation, the burden of proving which rested on the plaintiff.

SCOPE OF HYPOTHETICAL QUESTIONS

It is not allowable in asking a hypothetical question to incorporate into it the opinion of another expert. What facts a hypothetical question must cover are to be determined by the sound discretion of the trial judge.—Laughlin v. Christensen, 1 Fed. (2nd) 215.

PERMITS TO PRESCRIBE ALCOHOL

The Missouri Court of Appeals holds, State v. Sass, 266 S. W. 765, that Rev. St. 1919, §6592, providing that permits to physicians to prescribe ethyl alcohol and wine "may" be granted by the judges of the county court does not make it the absolute duty of the county court to issue a permit.

TUBERCULOSIS HOSPITAL DISTRICTS SEPARATE ENTITIES UNDER MASSACHUSETTS STATUTE

In a proceeding under the Massachusetts Workman's Compensation Act for injury to a laborer in a tuberculosis hospital established under Mass. St. 1916, c. 286 (G. L. c. III, §§78-91), the Massachusetts Supreme Judicial Court holds, Peck's Case, 145 N. E. 532, that such hospitals are managed by county commissioners as trustees, the funds for their maintenance ultimately coming from a district served within the county, which districts are separate entities, and the applicant was not an employee of the county so as to make it liable under the Compensation Act, but was an employee of the county commissioners acting as trustees for the tuberculosis hospital district.

TRIAL COURT HELD NOT IN ERROR IN REFUSING TO ORDER X RAY EXAMINATION OF PLAINTIFF WITHOUT HIS CONSENT

The defendant in an action for personal injuries asked the court to appoint a disinterested physician at the defendant's expense to make a physical and x ray examination of plaintiff. The court ordered the physical examination, but declined to make an order requiring the plaintiff to submit to an x ray examination without his consent upon the ground that there was always a possibility of injury in connection with the taking of x ray plates. The plaintiff refused to give his consent to an x ray examination unless he should be given a bond indemnifying him against injuries that might possibly result to him from the taking of the pictures. It was held, Lawrence v. Pickwick Stages (Cal. App.), 229 Pac., 885, that since the defendant contended that such an examination was important to its case, and since the plaintiff was willing to submit to it upon being indemnified against injury, there was no good reason why the defendant should not have so indemnified him. The court said: "The evidence was required by the defendant; if it involved any cost in money to secure it, that was a proper charge against defendant, and if it involved any cost in physical injury to plaintiff, that was, equally, a matter for which the defendant should pay." It was, therefore, held that the trial court did not err in not ordering an x ray examination of the plaintiff.

WHETHER CONDITION FOLLOWING INJURY WAS RESULT OF CARELESSNESS IN SELECTING PHYSICIAN AND SURGEON QUESTION FOR JURY

In a personal injury action the Supreme Court of California held, Dewhirt v. Leopold, 229 Pac., 30, that where the question of whether or not infection and necrosis which followed the injury were the result of carelessness or negligence chargeable against the plaintiff in making his selection of physician and surgeon were submitted to the jury upon full and fair instructions, the Appellate Court was not at liberty to disturb the jury's implied findings that there was no carelessness in making such selection, inasmuch as there was ample evidence to support them. There was nothing in the record to show that plaintiff was negligent in the selection of a physician and surgeon and no substantial testimony by which it could have been inferred that the infection and necrotic condition were attributable to inattention or maltreatment on the part of the attending physician and surgeon. No physician or person skilled in medicine or surgery so testified.

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Psychological Factors in Hyperthyroidism*

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The basic pathogenesis of hyperthyroidism is as yet unknown, therefore we may consider it to be a relatively safe procedure to offer a few suggestions tending to shed additional light upon this disease syndrome, which is in many respects one of the most complex in all physiobiology in spite of the fact that it has manifested itself as few other diseases have, into more or less distinct or well recognized chemical, physical and psychological panels or aspects, all of which are integrated into the total organism; a general subject which has been discussed elsewhere (1).

In order to reinforce the foregoing statements let us turn to some of the research and thought trends expressed in the literature on the subject. Crile (2) began a recent discussion of the problems of hyperthyroidism with the following admission: "At the outset let us admit that we know of no specific pathological basis for the syndrome that we designate as hyperthyroidism. We have not sufficient information regarding the mechanism of the disease to argue regarding its pathology. We admit that there is no specific criterion whereby to establish the diagnosis in the borderline cases, that is, to determine at what stage altered function on the outer boundaries of normality ends and hyperthyroidism begins." He emphasizes surgery as being the shortest road to recovery in all types of goitres including the simple forms (if pressure exists), adenomatous varieties, malignant glands, and the exophthalmic forms. He remarks on the low mortality in hundreds of cases of exophthalmic goitre operated in by various technical procedures, but comments little upon the percentage of cures or good results. Again we may quote from a digest of Boothby's (3) impression: "Exophthalmic goitre is a constitutional disease apparently due to excessive probably abnormal secretion of an enlarged thyroid gland with pathologically diffuse parenchymatous hypertrophy and hyperplasia. The condition is characterized by an increased basal metabolic rate and the resulting secondary manifestations, by a peculiar nervous syndrome and usually by exophthalmos, with a tendency to gastrointestinal crises of vomiting and diarrhea. The cause of the altered pathology and disturbed function of the thyroid gland is not known. In reply to the question 'If both exophthalmic goitre and adenomatous goitre with hyperthyroidism are due to an excess of thyroid secretion, can there be a differentiation into two diseases?' several hypothetical answers are possible, but the one held by Plummer as the most probable is briefly as follows: The symptoms of adenomatous goitre with hyperthyroidism can be produced by the administration of an excess of thyroid extract or thyroxin, therefore adenomatous goitre with hyperthyroidism is regarded as due to the presence in the body of an excess of normal thyroid secretion. The symptoms of exophthalmic goitre, however, cannot in their entirety be produced by thyroid feeding. The symptoms which are not produced in characteristic form are exophthalmos, the typical gastrointestinal crisis, the peculiar nervous phenomena and finally the metabolic status, as the result of which a postoperative reaction may arise which terminates in death within about thirty-six hours.

All of these symptoms which are characteristic of exophthalmic goitre can probably be explained on the assumption that the secretion of the thyroid gland is not only present in excess but is also an abnormal product."

Holst's study (4) of three hundred cases of exophthalmic goitre took him into the fields of internal medicine, surgery, pathology, ophthalmology, gynecology, neurology, psychiatry and also into biochemistry. He concluded that the actual cause of the tissue change was still unsolved although the thyrosis and the exophthalmic adenomas had been thoroughly studied. He also emphasized that primary exophthalmic goitre does not occur endemically while the secondary form is endemic in most cases. Among many others Weiss (5) has emphasized the psychoneurotic and nervous disturbances in hyperthyroidism, and in his opinion, which is also similar to some others, these psychic disorders in patients with toxic goitres are not caused by the toxemia, but are parallel symptoms of a degenerative constitution, each group of symptoms being able to influence the other. Oswald (6) also believes that exophthalmic goitre occurs only in subjects with a neuropathic disposition. He induced hyperthyroidism artificially in fox terriers, but only in those said to be degenerated by inbreeding. He concluded that the thyroid secretion lowered the general threshold of visceral nervous system response.

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Kessel (7) and his coworkers also state that the basic pathogenesis is entirely uncertain, and remark that "the administration of the thyroid gland may augment the symptoms of exophthalmic goitre or evoke some of them in normal individuals, but it has never been possible to produce artifically a typical clinical picture of exophthalmic goitre. The only constant symptoms that Carlson (8) was able to produce from feeding large quantities of thyroid extract to man and other vertebrates were loss of weight, gastroenteritis, and diarrhea. He never succeeded in constantly producing exophthalmos, tachycardia, goitre or nervousness." Other substances, notably cocaine, epinephrin, ergotoxin and tyranin, also augment or reproduce the symptoms even more accurately."

Fox (9) has considered over five thousand autopsies on captive wild animals, and has had as well a large clinical experience with diseases of animals at the Philadelphia Zoological Gardens. Upon many occasions he has seen animals with evident goitres, some of which produced pressure symptoms, but he has not been able to detect bulging of the eyes or especial nervousness. In making a diagnosis he used care to exclude mild swelling of the gland seen in acute infectious disease, and under conditions of sexual activity. In short "no case of exophthalmic goitre as the symptom complex is known in man has been observed, yet the anatomical alterations, hyperplasia without colloid and with papillary or solid adenomatoid character, are abundantly represented. For the pathologist to accept a case as toxic goitre, I would ask evidence of enlargement of the heart and perhaps in addition degeneration of the myocardium." Two cases, one in a raccoonlike dog and the other in a grey wolf, presented syndromes resembling somewhat that of man, but there was no exophthalmos or nervousness during life.

Attempts have been made to throw light on the subject through physical chemical investigation, and Starlinger (10) has usually found in cases of struma that the arterial plasma has a coarser dispersion than the venous plasma, although in some cases an inverse relationship is found. The former is present with a hyperfunctional gland while the latter exists with a hypofunctional one. The function of the thyroid gland is here interpreted as a mechanism for demolition of high molecular protein compounds. This is a suggestion from the physiochemical aspect of the problem which when further developed may aid us in diagnosing borderline cases.

Let us now discuss some of the obvious relationships between the thyroid gland, its disorders, the genital organs, erotic mechanisms and emotional states. Crotti's well known classification of hyperthyroid states is based upon the periods of development of the genital system. Thus: 1. Infantile group (children up to ten years of age—the genital system is in its expectancy). 2. Juvenile group (from ten to fifteen years of age—genital system is undergoing development). 3. Adolescent (fifteen to twenty-five years—genital system has reached its maturity). 4. Adult (after twenty-five years of age).

Gaskell (11, 12) first pointed out a similarity between the uterine glands of Scorpio and the thyroid gland of the lowest vertebrate, Ammocetes (13). Brown (14) gives an excellent summary of the phylogenetic relationship as follows: "It will be found that the position and arrangement of the uterus in Limulus closely resembles that of the thyroid with its thyroglossal duct in Ammocetes, the larval lamprey, one of the most primitive of the vertebrates, not only is the presence of this duct thus explained but as Gaskell says, 'The relationship which has been shown from time immemorial to exist between the sexual organs and the thyroid in man and other animals, and has hitherto been a mystery without any explanation may possibly be the last reminiscence of a time when the thyroid glands were the uterine glands of the paleostracan ancestor.'"

These connections may with interest be traced back to the still earlier development of the segmental coxal glands, of which the pituitary, thyroid, tonsils, thymus and others are representative paired survivals. After noting the close phylogenetic relations between the tonsils and thyroid gland it is easier to understand the connection between tonsillar sepsis and a variety of thyroid enlargement. Perhaps from this angle there are two kinds of goitre, one with an emotional pathogenesis and the other bacterial in origin.

Chief among the numerous trophic and other changes in hyperthyroidism Blondel (15) has found atrophy of the uterus. This atrophy is possibly the explanation of sterility in certain cases. He also noted how much more prevalent hyperthyroidism was in women during the war than other years and explained it by the prevalence of emotional factors.

Ewing (16) notes that the occurrence of thyroid tissue in ovarian tumors has long been recognized. They are relatively frequent in ovarian teratomas while very rare in testicular ones. Clinical evidence has been brought to show that these ovarian thyroid tumors may function vicariously for the thyroid gland, since they may exist as small islands of thyroid tissue or become bulky tumors. In fact Kovacks (17) has recently described one of these rare tumors of the ovary which gave goitrelike symptoms. In short symptoms of exophthalmic goitre developed with the tumor and subsided after its surgical removal. The structure of this tumor was that of a colloid goitre and appeared to be morphologically, chemically and functionally true thyroid tissue. One wonders whether these tumors are all teratoid rests or are produced by downgrowth of superficial ovarian epithelium, a metamorphosis as was clearly shown by Bauer to occur in some cases, but probably not all originate according to Bauer's idea.

We may now consider some of the current ideas regarding the rôle of emotional factors in hyperthyroidism. Maranon (18), one of the pioneer investigators in this realm admits that emotional stress is particularly likely to induce hyperthyroidism when there is already a predisposition to excessive thyroid function, but he insists that emotional stress alone may be sufficient to bring on hyperthyroidism even in the normal. He classifies hyperthyroid states into seven different types in addition to and separated from the classical exophthalmic goitre. These types are labeled 1, cardiovascular form; 2, nervous form; 3, consumptive form; 4, digestive form; 5, diabetic form; 6, climacteric form, and finally, 7, the simple form which may later develop into the exophthalmic

type. None of the symptoms are distinctly pathognomonic and in dubious cases he always rejects the assumption of hyperthyroidism unless there are present at least three of the principal symptoms including unstable tachycardia, tremor, enlargement of the thyroid, exophthalmos, retraction of upper eyelid, patient losing weight, pronounced motor restlessness, emotional instability, and sensations of heat with vasomotor irritability localized especially in the thyroid region.

Juarros (19) has drawn attention to combinations of hyperthyroidism and neurotic symptoms often spoken of erroneously as hysteria. Many of these patients are old maids, selfcentred, melancholy and irritable with complaints of fatigue, and with insomnia. I have two cases now under treatment with symptoms exactly corresponding to this variety of reaction described by Juarros. From another angle Snowden (20) of London has stated that hyperthyroidism and subsequent hypothyroidism which results are not readily distinguished in the two cases where they arise from, 1, an anxiety state in which bacterial toxemia is not a particular strong feature, or 2, from bacterial toxemia in which the anxiety state is not noticeably established. "When the cause which has originated this anxiety state has been removed the condition then may need the endocrinologist or bacteriologist." Any attempts to treat these cases without psychotherapeutic measures will too frequently end in disappointment.

True hyperthyroidism rarely occurs in children before puberty. In Sattler's (21) group of 3,477 hyperthyroid patients, only 184 were under fifteen years of age. I have not had the opportunity as yet to study his report carefully, therefore I am unaware of the percentage of females represented. Buford (22) in 1922 was able to find only eighteen cases of hyperthyroidism in children under twelve years of age in twenty years of literature. Eight of these cases were in children under five years, the youngest being that reported by Klaus (1914) an infant nine months old (23). However, Clifford White (1912) has reported a case of congenital exophthalmic goitre. Buford's patient was only six years old, being the youngest reported to be operated on where operation produced relief. This author's case and three others he mentions were in females, in fact no other sex is mentioned in his comments on the literature. Frantz (24) has reported the very interesting case of a female child who had typical hyperthyroidism at the age of one and one half years. This child was nine years of age at the time she was examined by the author, but tested to the mental age of 12.2 years. In addition she had a marked neurosis with peculiar behavior. Her mother also had exophthalmic goitre. He considers it to be a neurosis of the entire vegetative nervous system.

Brooks (25) has discussed the situation of temporary or physiological hyperthyroidism in young people of both sexes brought about by abnormally great demands upon the thyroid, and the result of developmental growth associated with too much emotional output. He describes several instances and minimizes the need for surgical or medical interference but emphasizes social and mental management and readjustment. He says that "Freudian impulses" have very little, if anything, to do with these mechanisms, a statement characteristic of those who have no insight into the breadth of analytical psychology; however, he immediately proceeds to say that the syndrome occurs in temperamental persons whose unbalanced habits of life cause strain upon the thyroid and other glands.

The physiological relations of the size of the neck to the sexual life was well recognized in the ancients and Lusk (26), quoting from Garrison's *History of Medicine,* states: "The Romans recorded the girth of the neck of a young woman with a thread or tightly fitting necklace and sought to determine defloration or pregnancy from the increase in the size of the neck, although they had no knowledge that this was due to an increase in the size of the thyroid gland."

In 1923 I (27) published an account of the hyperthyroid question as it then appeared, together with notes on the analysis of the mental factors playing a rôle in two cases, one of which had been thyroidectomized without result. Both patients exhibited several features in common. The infantile father attachment persisted with a powerful unconscious urge toward the father imago, both were profoundly influenced by autooerotic cravings, and definite hyperthyroidism did not present itself until very acute conflicts began between instinctive desires and moral codes. After observing the results obtained at that time by psychotherapy I was convinced that surgical procedure when successful is instrumental in removing a few symptoms from the syndrome, thus breaking the arc, but it frequently fails, for surgery is powerless to remove the underlying predisposing factor and its by products in the personality.

The foregoing survey of some present trends of thought concerning hyperthyroidism may now be summarized into a few points which seem to be quite definitely settled, and which have a direct bearing on, or prepare the setting for the considerations about to follow:

1. There is no generally accepted theory of pathogenesis of exophthalmic goitre.
2. The impression has arisen universally that it is a many sided disease, not dependent entirely upon an excess of thyroid secretion.
3. That exophthalmic goitre does not appear spontaneously in infrahuman forms, nor has it been completely induced by experimental procedures.
4. That phylogenetically the thyroid once functioned as a uterus in primitive forms.
5. Definite thyroid rests or ovarian metamorphoses into thyroid tissue occur as neoplastic conditions.
6. That uterine atrophy with sterility is prone to occur in hyperthyroid states.
7. That the disease is rare in children before the onset of the pubescent state of the genital organs, and shows a preference for females of all preclimacteric ages, rarely developing after the climacteric.
8. And finally that emotional factors are obvious, playing an important rôle in the production of the symptoms and that perhaps unconscious motives serve to determine some of the pathognomonic features. Therefore it may be said with conviction that true hyperthyroidism is a product of or at least closely associated with emotional and sexual developmental disorders, and probably represents a particular constitutional make up in the broadest sense of the term.

I shall now present a few impressions from the viewpoint of analytical psychology on cases of exophthalmic goitre to emphasize what I believe to be the correct method of approaching the analysis of the disorder.

1. Chemical investigations are of utmost importance in ascertaining the state of the autonomic nervous system, the basal metabolic rate and the carbohydrate tolerance. It goes without saying that these tests should be satisfactorily done in each case.

2. The physiological level must be carefully and systematically investigated at length with particular attention to:

a. Gastrointestinal disturbances.

b. Cardiac irregularities.

c. The presence of exophthalmos. (Here it is well to keep in mind the great variability in exophthalmic goitre cases, concerning this symptom which may not be appreciably present or may progress to a complete blindness such as occurred in a patient reported by Lahey (28). In spite of the removal of the superior cervical sympathetic ganglia, it was finally necessary to enucleate both eyes).

d. Additional eye signs including widening of palpebral fissures and condition of pupils.

e. Presence of tremors and toxic crackling in the extremities.

f. Activities of sudoriferous glands—temperature and state of peripheral circulation, particularly of the extremities.

g. The size of and manifestations of tension in the thyroid gland.

h. Condition of reflexes.

i. Presence or absence of Lian's sign. Maranon (29) reported on this sign which was found present in eighty-five per cent. of cases with hyperthyroidism. A very gentle rubbing of the neck provokes a reddening of the skin in many neurotic subjects. In cases of hyperthyroidism this redness is limited or localizes quickly just above the thyroid gland. Maranon discusses the relation of this sign (which he described in 1919) to Lian's local hyperesthesia in hyperthyroidism. I have noted in several cases that such a bright red spot with margins quite sharply limited appeared over the thyroid area during the discussion of unpleasant emotional material. In fact in certain cases it could be depended upon as indicating the presence of unpleasant associations (complex indicator).

3. The following mental traits and behavior peculiarities have been found present in the exophthalmic goitre situation. From the viewpoint of psychological analysis the material is unusually rich in content.

a. Intense emotional swings throughout life, periodical and brief in nature, but with definite depressions and agitations.

b. Love life inconstant with frequent dissatisfactions with love object.

c. Unexplainable fears concerning places and people.

d. Unexplained but active and intense hatreds for certain people and animals.

e. Erratic behavior in solemn or formal situations.

f. Frequent and often serious misunderstandings with members of the family.

g. Frightening dreams which are frequently incestuous in nature.

h. A number of patients have nocturnal anxiety attacks, with pseudoasthmatic, pseudoanginal and tachycardial symptoms accompanied by numbness and great fear.

i. Analysis discloses that as children in the pregoitrous stage these patients are extremely sensitive and selfconscious with exaggerated feelings of inferiority, which are too often discovered and utilized as sadistic outlets by their playmates. Especially painful are the memories of any disparaging comments made even in fun, concerning their physiognomy.

j. Infantile birth phantasies persist with much power in the unconscious.

k. Early sexual traumata have been found to play an important rôle in the pathogenesis of the disorder.

Ten cases of frank exophthalmic goitre as well as numerous psychotic patients with goitre have been psychoanalyzed with results which have led us to believe that the disease is a severe, often structuralized neurosis depending upon an early powerful bond of father attachment dominated by an unconscious incest mechanism, and with strong autoerotic cravings.

With the exception of the psychotic cases, these patients have been largely reconstructed chemically, physically and psychologically. In some the results are better than could have been expected from surgery, and the detailed accounts of the psychotherapeutic hours will be published later, therefore it must suffice for the present to confine our remarks to the nature of the mechanism.

Since true exophthalmic goitre is less frequently seen in men than in women it may be well to outline briefly the situation in the only male patient with goitre I have as yet had the opportunity to investigate. His case deserves detailed consideration in another publication.

Case.—A man, twenty-three years old, a member of a homosexual compact, came to be treated for nervousness, anxiety and constant headache—he had been in this condition for at least seven years. Two years before consulting me he had had a bilateral thyroidectomy performed by a well known competent surgeon, after which some of his symptoms became attenuated. He still had some tremor, slight exophthalmos, a moderate tachycardia and a basal metabolism 20 plus. This man had passed through terrific conflicts and had undergone severe persecutions because of his homosexual constitution, which was by no means entirely acceptable to his conscious life.

The analysis of the early home situation in which he strongly identified himself with his beautiful mother (he was vain and narcissistic), his prolonged masturbatory activity and phantasies, and particularly his persistent curiosity towards his father's genitals with subsequent longing to take the mother's place in his father's affection, all of which later turned to hatred of the whole situation—rendered him psychologically into a woman with impregnation phantasies toward the father: Thus he may be considered categorically as a female. In this case the analysis revealed the powerful mother fixation with mother identification, overt autoerotic trends, and overt homosexuality with an inverted incest craving. His symptoms were removed by psychotherapy and he has been able to sublimate his homosexuality in

creative work. These psychotherapeutic experiences with goitre together with a consideration of the principles of phylogenetic and ontogenetic fundamentals of development have led to the following formulations which are the basic points in my thesis on pathogenesis.

1. Fear states—anxiety—*angst*—are universal emotions present in all living animals. It is a self-protective mechanism—a phylogenetic flight lying deeply in the remote phyelytic past.

2. All symptoms of hyperthyroidism, chemical, physiological and psychological, are exact duplicates of those of fear.

3. Exophthalmic goitre is a special type of hyperthyroidism—it is what one might call structuralized fear—the constant flow of the river of emotion has cut its channels definitely in the structure and functions of the tissue. Even the eye signs in exophthalmic goitre are those of fear. Collins (30) states that enlargement of the pupils, increased prominence of the eyeballs and widening of the palpebral fissure increase the range of circumferential vision, thereby assisting the animal in perceiving the early approach of danger, and in obtaining safety in flight. Mydriasis brought about by emotional influences acting through sympathetic nerves on dilator fibres of the iris may explain the psychic influences on production of glaucoma.

4. Exophthalmic goitre results from a specific psychological situation. Other forms of hyperthyroidism and goitre may not and probably do not arise in this way.

5. There is a universality of normal father attachment or fixation with transitory and finally converted or sublimated father incest cravings—naturally more marked and persistent in girls. In certain individuals an overdetermination or heavy bond fixation on the father with incest cravings stronger than normal, but usually unconscious, and failure in sublimatingt these, expresses itself through the thyroid segment, because it is phylogenetically a uterus, and thus at maturity readily lends itself to symbolic expression.

6. Thus the tumescence of the thyroid may represent a father impregnation phantasy (an impregnation phantasy materialized in the thyroid) the substance of which is composed of hyperplastic tissue producing an excess of secretion initiating and perpetrating bodily changes which become the classical, physiological and chemical part of the picture.

7. Thus exophthalmic goitre is an aggravated form of anxiety neurosis, a structuralized fear at the symbolic level, caused by a particular pathogenic situation in the form of repression of father impregnation phantasies plus autoeroticism and active sexual suppressions—a mechanism expressing itself in the thyrotrophic individual through the thyroid segment because of its phylogenetic history and relations which accounts for the fact that fifteen females to one male are affected by this disease syndrome, and I personally believe that the male cases are instances of early psychogenetic inversion or distortion involving the same mechanism.

8. This paper is not intended to depreciate any particular method of treatment, and I am well aware that exophthalmic goitre is apparently cured or markedly improved by a variety of procedures, including surgery, x rays and drugs, since these methods remove or suppress the offending organ, thus alleviating distressing symptoms, but I do not feel that the basic neurosis is thus removed, a feature which must be taken into consideration if the therapeutic attack is to be entirely successful. Granting that patients are completely cured by surgery or other mechanical means, the results could not serve as potent arguments against a psychogenic origin, since the emotional expressions of an individual may be permanently altered by the excision of an affective organ, for example the testicles, for in both instances the means of that particular expression has been obliterated.

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Carcinoma of the Sigmoid Colon Rupturing Into the Abdominal Wall*

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There are two points worthy of attention in this case: first, practically the entire absence of symptoms pointing to the presence of a far advanced adenocarcinoma of the bowel with extensive metastasis, and second, the rupture of an annular carcinoma of the gut into the abdominal wall, without peritonitis.

Case.—The patient was an adult white woman, aged sixty-seven, divorced, born in Ireland. Her chief complaint was of pain and swelling in the left groin of three weeks' duration. Her mother died at eighty-six from "heart trouble, cirrhosis of the liver, and softening of the brain," and her father died at eighty-six from a "stroke." One brother and one sister were living and well, one brother died at seventy-five from a "stroke." There was no history of miscarriages, tuberculosis, malignancy or familial disease in the immediate family.

Her general health had been good until the present illness. She had had no childhood affections of serious moment, but had an attack of erysipelas twenty-four years ago. She had no headaches, eyes were hyperopic, ears and nose objectively and subjectively negative. For three weeks she had had a discharge from the throat, and her "tongue felt big and would not protrude"; there was no sore throat or abscessed teeth, the upper teeth had been extracted several years ago. Respiratory organs were negative for pneumonia, pleurisy, hemoptysis, and cough; she had night sweats lasting over a week one month ago. She had had some dyspnea for the last four or five months; cardiac symptoms were otherwise negative.

Gastrointestinal symptoms: Her appetite had been good, she was generally not constipated and there was no abdominal pain at any time. Six months ago, during a socalled nervous breakdown, the patient had loose bowel movements, which gradually became less frequent. At present, she has three or four movements a day; no history of melena.

Genitourinary symptoms: Negative for diuresis, dysuria, hematuria. Nocturia three or four times, which had been increasing for the last few years; voided seven or eight times during the day. Menstruation began at fourteen, was regular, lasted three days, no pain. The menopause occurred at fifty-four; no leucorrhea since menopause. She was first pregnant at twenty-two; the child is living and well; she had one miscarriage at twenty-four, and no other pregnancies. She denied venereal disease. She was married at twenty and lived with her husband only three years. At the age of forty-nine, she had a pelvic operation, which, from the patient's description, was probably a correction of the position of the uterus. It recurred four years ago, and a pessary was inserted then which was never removed until six months before admission to hospital on account of the present illness.

The onset of the present illness occurred about six months ago, when the patient became somewhat irritable and complained of discomfort in the lower abdomen. Her physician told her she had a "nervous breakdown," with a "weak heart and lumbago." He removed the vaginal pessary which had been in place for over three years without removal, and told the patient's daughter that a "tumor" might result from wearing the pessary so long. The patient began to lose weight about this time, although she believed her weight had been somewhat declining for the last two years. After a time, she returned to her work as a housekeeper, until six weeks ago when she was again troubled with "lumbago," and stopped work. Three weeks ago, she first noticed a pain in the left groin which within a few days prevented her from standing, and she noted a swelling at the site which progressively enlarged. She had been bedridden about two weeks before admission. Her appetite was unimpaired; her weight loss not impressive; bowel movements about four times a day; urinated seven times if out of bed. She generally felt very well; there was no history of previous swelling in this region.

Physical examination showed a tumor mass, about fifteen by eighteen cm., obliterating the inguinal fold, extending from the crest of the ileum laterally to the symphysis medially, and from a distance of about ten cm. above the inguinal ligament to about three cm. below it. The tumor was tense, fluctuated, was exquisitely sensitive and tender, and superficially reddened with dilated vessels. Fixation could not be determined because of the size of the mass and the pain, but the mass seemed distinctly extraperitoneal. The patient's hip could not be moved without pain. Lymph nodes elsewhere were not enlarged. The abdomen was large and full, but the patient stated that it had always been so.

The patient was an elderly white woman, anemic, nutrition only fair. She was in no apparent distress when quiet; not acutely ill. The eyes showed contracted pupils, but reacted to light and distance; extraocular motions were normal. Nose and ears were objectively normal. The tongue was thick, dry, protruded with difficulty, and was heavily coated. Teeth, uppers extracted, lowers poorly kept, with snags and caries. Throat was injected, with thick creamy exudate on the surfaces. Chest was normal in shape and contour; left nipple inverted, otherwise breast was normal. The heart was somewhat enlarged, pulses were palpable, a palpable thrill which was visible over the central portion of the precordium; questionable mitral murmur; second aortic and second pulmonic equal; suggestion of aortic roughening. Lungs were hyperresonant, with

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somewhat exaggerated breath and voice sounds; no râles.

The abdomen showed a very thick panniculus; no organs were palpable; no masses or rigidity; tenderness absent except in region of tumor. Genitals were normal externally; uterus seemed to be in normal position but fixed; tenderness on left side and tumor could be palpated on that side; adnexa did not seem to be attached to tumor. There were no general adenopathy, and the extremities were negative except for local condition. Knee jerks and ankle jerks were not obtained. Clinical and laboratory findings before operation: Temperature on admission 99.2°, which fluctuated only slightly; on morning of operation it was 100°. Pulse, ninety on admission, fairly constant. Urine, pale amber color, specific gravity 1.014, acid reaction, trace of albumin, glucose negative, few hyaline casts, and a few white cells. Blood; total white count 62,000, ninety-three per cent. polymorphonuclears, seven per cent. lymphocytes. Blood pressure, 164/80.

The preoperative diagnosis could not be definitely made, except the very obvious acute abscess in the inguinal region, which it was thought most likely originated from a ruptured strangulated hernia of the Richter type.

The patient was taken to the operating room on the second day after admission, where, under gas and oxygen anesthesia, two incisions were made over the most prominent parts of the abscess. It contained several ounces of very foul smelling, grayish, bloody pus, and about ten to fifteen c.c. of gas. Immediately on making the incision, the patient stopped breathing, and the operation was rapidly terminated with limited exploration of the pus cavity, which, however, seemed to agree with the preoperative diagnosis of ruptured strangulated Richter hernia, with a resulting fecal fistula. Artificial respiration was given, rectum dilated, and stimulative measures used. She began to breath shortly, but her condition was poor on return to the ward.

Postoperative course: The patient slowly regained consciousness and became quite noisy and restless on the second day. On the evening of the second day, she became visibly weaker, quiet, and lost consciousness. Her temperature rose to 101.8° and to 102.6° on the morning of the third postoperative day, when she died.

Postmortem examination: The body conformed to the outline of the physical examination given above, except that the original tumor in the left lower quadrant was not present, but instead, the two operative incisions described. The cavity opened into by these incisions was lined with greenish necrotic slough, the contents having a distinctly fecal odor; on exploration, there seemed to be an opening into the interior, but this could not be definitely ascertained by external examination.

On opening the abdomen, however, there was seen at a corresponding point with the external cavity mentioned above, an anastomosis of the sigmoid portion of the colon, by means of dense fibrous adhesions, with the extraperitoneal structures, i. e., muscle and subcutaneous tissues. These markedly injected adhesions held the sigmoid portion of the gut firmly to the side wall so that now by external examination, a definite sinus from the outside could be demonstrated to communicate with the gut at this point.

Dissection of the sigmoid colon and the immediately surrounding structures showed the upper third of the colon to be the seat of a large, fungating, ulcerating carcinoma, tending to run around the intestine and measuring ten centimetres in diameter. Further investigation and opening of the gut showed the ulceration to occur mostly on the lateral aspect, affecting the surrounding structures, i. e., the quadratus lumborum muscle posteriorly and through the transversus, internal oblique and external oblique so that the lumen of the colon was separated from the exterior by only the skin and subcutaneous structures. This huge abscess pocket was lined by greenish necrotic slough, and portions of fecal material were present in the cavity proper.

The liver was the seat of numerous large, white, firm, metastatic nodules, increasing the size of the organ and rendering the surface very irregular. The largest nodule was in the tip of the right lobe and measured eight cm. in diameter. On section, metastatic carcinoma riddled the liver, there being one growth five cm. in diameter running the entire length of the organ. The liver was congested and presented a peculiar mottled appearance especially marked about the central veins. Microscopic section gave a picture of metastatic adenocarcinoma plus chronic passive congestion and fatty infiltration.

The microscopic picture of the original growth and the metastatic nodules in the liver was that of a typical adenocarcinoma showing distinct evidence of remaining alveolar formation but with some loss of polarity and marked atypical morphology and extensive overgrowth.

The remainder of the examination showed both grossly and microscopically brown atrophy, chronic fibrous myocarditis and atheromatous degeneration of the coronaries in the heart; sclerosis and atheroma of the aorta; chronic interstitial nephritis (arteriosclerotic type) and pyonephrosis of the kidney; senile degeneration and subserous myomata of the uterus; and senile, fibrotic, and cystic degeneration of the ovaries.

DISCUSSION

The occurrence of carcinoma of the sigmoid is not infrequent. Ewing (1) quotes Kaufmann, who found twenty-three per cent. of 123 cases of carcinoma of the colon situated in the sigmoid, and Korte, Petermann, and Anschutz who found forty-two per cent. of 297 cases. Korte (2) reports forty-one per cent. of 254 cases situated in the sigmoid. Judd (3) recently found forty-nine per cent. of 595 cases situated at the sigmoid flexure. Rankin (4), however, states that annular carcinoma is present in only one growth in four in the colon.

Clinically, the patient presented a history of diarrhea over a short period six months previous to admission. She had lost slightly in weight. Otherwise there was nothing to suggest carcinoma of the bowel, and the cardinal symptoms of pain, constriction, hemorrhage, tumor, and general debility were all absent. Handfield-Jones (5) reports a case in which there was not a single symptom to attract attention to the large bowel, in which there was an annular carcinoma of the rectosigmoidal junction, the patient living less than twelve hours after rup-

ture, Ashhurst (6) reports the case of a man fifty-two years of age, who gave no history of any symptoms except a mild constipation until five days before admission to the hospital when he became completely blocked by an annular carcinoma of the sigmoid.

We have been unable to find any record in the literature of a case perforating into the abdominal wall. Madelung's (7) collection of one hundred cases of carcinoma of the splenic flexure presents several which ruptured to result in peritonitis. Schwab (8) and Hartwell (9) report cases in which perforation of the carcinoma resulted in a subdiaphragmatic abscess, and such a case is described in St. Thomas's Hospital report (10) in 1905. Hutchinson and Wolbach (11) report a case in which perforation led to an extensive peritonitis followed by a secondary abscess between the colon, kidney, and spleen. Fawcett (12) reports a case in which the sigmoid flexure became attached to the bladder with the formation of a sigmoid vesicle fistula. Ashhurst (13) reports a carcinoma of the hepatic flexure in which a pelvic abscess formed.

The cases reported in the literature would suggest an infrequent occurrence of distant metastases. Such a view is held by Hartwell (9), and in the hundred cases collected by Madelung (7), the liver showed metastases only six times. Lynch (14) also states that sigmoidal growths remain stationary for a long time. However, Hayes (15) found from experience in one hundred cases of carcinoma of the colon, metastases to the lymph nodes most frequently occurred when the sigmoid was involved. In line with this, Cheatle (16), and also Handley (17), found that carcinoma of the lower bowel extended chiefly by the lymphatics and to a very slight extent in the submucous or in any part of the gut wall.

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The Winter's Mastoids*

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This résumé is based on the records of forty-one consecutive cases in which I operated during the five months' period from December to April. These cases are all taken from my private practice, as I wished to select those of which I had knowledge throughout their entire course.

INDICATIONS FOR MASTOID OPERATION

In a case of acute mastoid involvement, it is most important, and also at times most difficult, to decide when it is no longer safe to watch the development of the case and treat the patient symptomatically, but that an operation is necessary in order to conserve the patient's hearing and perhaps save his life. Several indications may be present, rarely are all found at one time, but generally at least two of them are to be found.

A postauricular swelling, of course, generally means an abscess under the periosteum covering the mastoid. This swelling could only be from one other source, namely, furunculosis of the auditory canal. When that is excluded, the indication for an operation is positive .

A drooping of the posterior superior angle of the bony external auditory canal is the next most positive indication. This drooping is caused by a periostitis at this point, which is the bone covering the aditus leading to the mastoid process, showing the probable condition of the whole of the periosteum covering the mastoid. This sign can be made out with little difficulty, the marked narrowing of the inner end of the canal on the diseased side being in contrast to the more spacious and lofty canal of the normal ear.

Persistent tenderness over the mastoid process is the next most reliable sign. Pain is another symptom which is of importance. This is generally worse at night, disturbing the patient's sleep.

*From the Department of Otology, New York Post-Graduate Medical School and Hospital. Read before the North Bronx Medical Society, May 14, 1925.

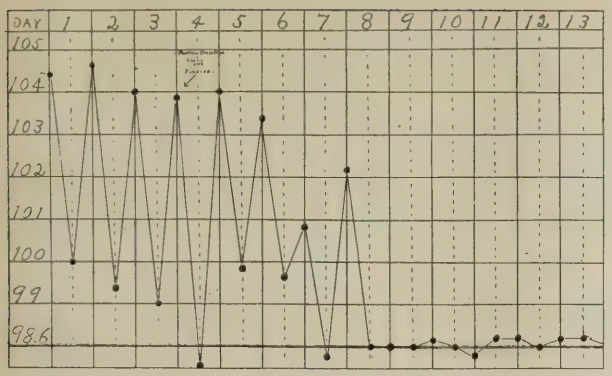

FIG. 1.—Temperature chart in a case of chronic suppurative otitis with acute mastoiditis and lateral sinus thrombosis. (Case I.)

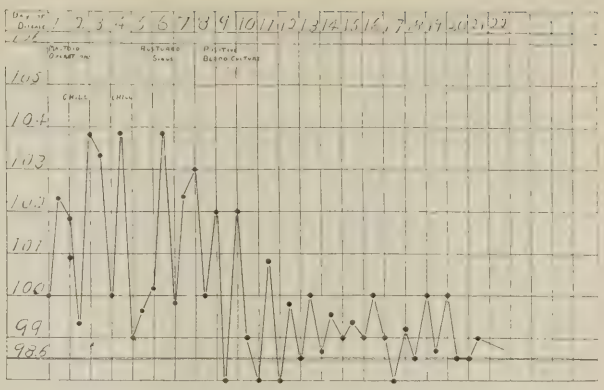

FIG. 2.—Temperature chart in a case of acute suppurative mastoiditis with lateral sinus infection. (Case II.)

Profuse discharge after the first week of an acute otitis is very suggestive of a mastoiditis which should be operated upon. It goes without saying that the pus that comes welling out of these middle ears could not all come from the narrow confines of the tympanic cavity, but is part of the drainage of the mastoid cells. Persistent discharge, which baffles all conservative efforts to dry it up, is an indication that some necrosis of the bone has occurred, and if we are concerned in saving the patient's hearing, the advisable measure is a mastoidectomy.

Elevation of temperature would be an indication for operation if persistent. This is a variable symptom. As a rule it is present in children, particularly in the evening; in adults it is rather the exception to have fever. Marked impairment of hearing of the sound conducting type in a case of mastoid involvement, should be an important consideration.

In the abstract, one may look on the mastoid operation as indicated, first and most important, to save life by preventing the extension of the inflammation to the interior of the cranium; second, to save the hearing, by removing from the patient a bony necrosis which is keeping up inflammatory changes in the middle ear that interfere with the delicate mechanism of the auditory apparatus, and third, to obviate the possibility of a chronic purulent otitis, which is at all times a menace to the health and life of the patient and a very certain cause of irreparable loss of hearing.

CLASSIFICATION OF CASES

The cases in which I operated may be classified as follows: Acute suppurative mastoiditis without complications, thirty-four; chronic suppurative otitis with acute mastoiditis, two; chronic suppurative otitis with acute mastoiditis and lateral sinus thrombosis, one; acute suppurative mastoiditis with lateral sinus infection, four. Of these forty-one cases, ten were in adults, the rest being in children under sixteen years of age. The ages varied from eight months to sixty-five years.

SIMPLE UNCOMPLICATED MASTOIDITIS

The thirty-four cases of simple uncomplicated mastoiditis are rather easily disposed of. They were all somewhat similar and a repetition of their histories would be tiresome. These patients were operated upon on the basis of the clinical picture just depicted, some having one combination of indications, some another. All but one were in the hospital seven days or less. Just as soon as the patients are fever free, we encourage them to get up out of bed for a short period, and at the end of a week they are quite able to help themselves.

The modern method of dressing a mastoid is much more simple and less painful than it once was. My plan is to place a cigarette drain of gauze covered by rubber tissue as far as the mastoid antrum; the replacement of this is barely noticeable.

We keep the mastoid wound open until the middle ear is dry. Some of these cases were completely healed with a dry ear, in two weeks' time from the date of operation. The average period of healing was four weeks. In one case a second operation was necessary before it would heal, an extension of necrosis later than that found at operation I suppose being responsible for this.

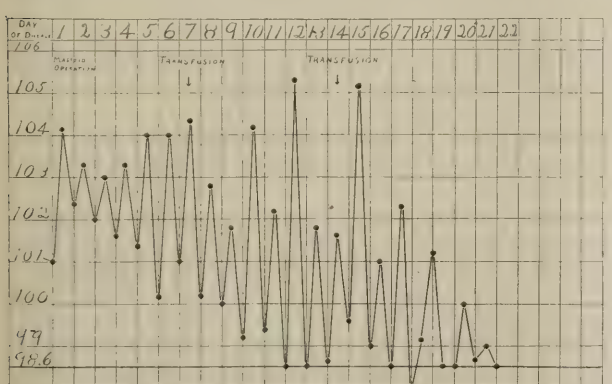

FIG. 3.—Temperature chart in a case of lateral sinus infection. (Case III.)

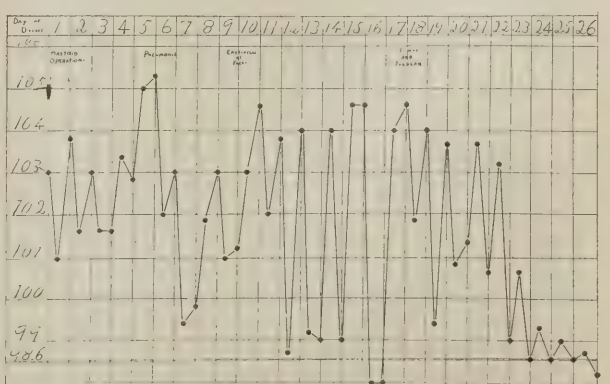

FIG. 4.—Temperature chart in a case of lateral sinus infection. (Case IV.)

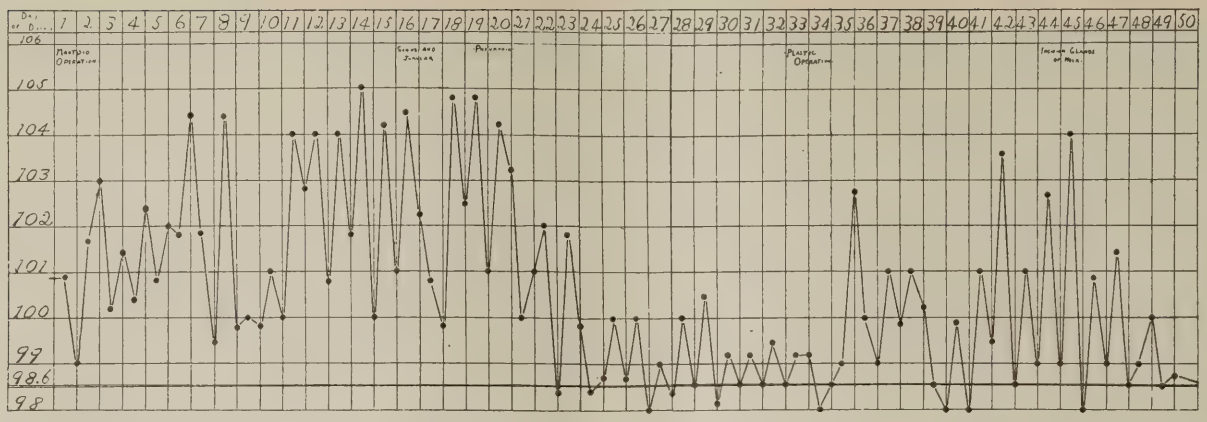

FIG. 5.—Temperature chart in a case of mastoiditis of the hemorrhagic type with sinus operation and jugular ligation on the sixteenth postoperative day. (Case V.)

CHRONIC SUPPURATIVE OTITIS WITH ACUTE MASTOIDITIS

In the two cases of chronic purulent otitis the patients were really fortunate in having acute infection of the mastoids, as they were thus forced to be operated upon and their necrotic middle ears were cleaned up at the same time by the radical mastoid operation.

CHRONIC SUPPURATIVE OTITIS WITH ACUTE MASTOIDITIS AND LATERAL SINUS THROMBOSIS

This was a particularly interesting case.

CASE I.—G. O., aged sixteen, was seen by me at his home in consultation with Dr. Bartels, on January 9, 1925. He had been confined to his bed with a temperature of 100° to 103° for three weeks. His illness had begun shortly after eating some fish, which it was thought gave him gastric symptoms. This was at the time of the typhoid fever epidemic, and a Widal reaction had been taken, which was negative. His symptoms for the most part had been gastrointestinal, he had had no aural pain and no headache. As his left ear had been discharging for several years and the amount of discharge had noticeably been augmented since his illness commenced, I was asked to see him. I found an emaciated youth who showed a profuse aural discharge, some drooping of the posterior superior angle of the canal, and a noticeable thickening of the drum remnants. A slight amount of mastoid tenderness was elicited. I sent him to the hospital the same day for observation and study. His blood was negative for malaria and typhoid, he showed only a moderate leucocytosis and his blood culture was sterile. His temperature had a septic range with daily excursions from normal to 104° and over.

On the fourth day of his hospital stay, I operated on the mastoid and found most extensive necrosis extending into the occipital bone. There was an extensive clot in the sigmoid sinus reaching downward into the jugular bulb. This I cleaned out, and then exposed the internal jugular vein and found it to be collapsed. This was resected to a point above the facial branch. He had a moderate febrile reaction for the next few days, when his temperature reached normal to stay.

The most interesting point about this case was the absence of pain. By the way, the organism found in the mastoid was the Streptococcus mucosus capsulatus, which is notorious for being present in this painless and insidious type of aural case.

FOUR CASES OF ACUTE SUPPURATIVE MASTOIDITIS WITH LATERAL SINUS INFECTION

CASE II.—Mrs. Z., aged fifty-four, was admitted to the hospital, on December 19, 1924, and had a right sided mastoidectomy performed on that day. There was considerable necrosis, the sinus being necessarily exposed. On the third postoperative day she had a severe chill lasting twenty minutes, with a subsequent rise of temperature to 103.6°. A blood culture was then taken; this later showed the presence of the Streptococcus viridans. On her seventh postoperative day she had a profuse unprovoked hemorrhage from the sinus. On the eighth day she showed a phlebitis in the left lower extremity. This was easily enough to account for her fever at that time, which was moderate. So I decided to do some watchful waiting and was rewarded soon by her temperature reaching normal permanently. She was able to leave the hospital three weeks after her operation, of course still with the phlebitis. The mastoid was dressed at her home and she finally was discharged entirely well six weeks after the operation had been performed.

The interesting points in her case were: 1. The chill. Did it come from a septic mural thrombus? 2. The hemorrhage from the sinus. Could it have washed away the thrombus? 3. The positive blood culture, which generally necessitated a shutting off of the infected mastoid focus by ligation of the vein. 4. The phlebitis, which looked as if it were metastatic. 5. Finally, the fact of the subsidence of the symptoms and her complete recovery without further surgical intervention.

CASE III.—This was a case of lateral sinus infection in which recovery took place after two blood transfusions. Geraldine W., eighteen months old, the child of a physician, was operated on for a left sided mastoiditis on April 3, 1925. Her temperature had been high from the commencement of her ear symptoms five days before. In spite of the operation her temperature stayed steadily around 103° to 104° for the next five days. Then it began to take a septic curve 100° to 104°. On the seventh day, the blood cultures being sterile, I had Dr. Tracy

Fisk transfuse her with 115 c.c. of her mother's blood. This seemed to have a good effect, the temperature dropping considerably for three days, when it began again to steeple between 99° and 105° for four days. We then had her transfused with another 100 c.c. After one more septic excursion the temperature came down by lysis and she was discharged from the hospital three weeks from the date of her mastoid operation, in good condition. I am confident that the transfusions in this case turned the tide and gave the patient enough complement with which to fight the sepsis from which she was suffering.

Case IV.—This was a case of lateral sinus infection with no demonstrable clot on operation, which was brought to recovery by ligating the internal jugular vein.

Isabel K., two years old, had a leftsided mastoidectomy on January 30, 1925. She ran a fairly high postoperative temperature which was explained by finding pneumonia on the fifth day. This complication cleared up, to be succeeded by facial erysipelas. On the eleventh day the temperature began to steeple and continued to do so, until on the eighteenth day I again operated on her, exposing the internal jugular vein, which I found surrounded by periphlebitis. I ligated the vein above the facial branch, and explored the sinus but found no demonstrable clot. After a few more days of fever, the temperature curve reached normal. She left the hospital twenty-six days after her mastoid operation, and shortly afterwards was discharged with her wounds healed and the ear dry.

Case V.—This case was similar to Case IV. E. D., four years old, was operated upon on November 17, 1924, for a leftsided mastoiditis. Her case has been reported elsewhere. Suffice it to say here that it was a hemorrhagic type of mastoiditis, showing high temperature from the outset, with a sinus operation and jugular ligation on the sixteenth postoperative day, then pneumonia, then cervical adenitis with operation. She finally left the hospital in good condition after a sojourn of fifty days.

114 East Fifty-Fourth Street.

Prolapse of the Female Urethra

Report of a Case

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Prolapse of the urethra in the female, although not a rarity, is of such infrequent occurrence that cases are of sufficient interest to warrant their being reported. The condition may occur at any age, though it is stated that most cases occur in children. The cause is not always clear. When preceded by a dilatation of the urethra, with more or less relaxed mucosa, in women with lax vaginal walls, it is conceivable that strain or exertion or trauma may cause the mucosa to roll out and present beyond the external meatus. In children with no such predisposing causes, it is hard to understand how the same exciting factors will bring about this result, unless there is some developmental or nutritional deficiency in the attachment of the urethral mucosa to the underlying structures This is probably the condition that exists in cases occurring in children, as well as in chlorotic and debilitated women. Long continued congestion and irritation of the urethra favors its occurrence.

The prolapsed membrane may retain its normal color for a time, but soon becomes deep red or bluish due to the partial strangulation of the tissue. The normal appearance is retained for a longer time when the urethra is dilated and the external meatus is wide.

The condition must be differentiated from other projections from the external meatus such as urethral caruncle, new growths of the urethra, and prolapse of the bladder through the external meatus. This can be readily done when it is understood that in prolapse of the urethra the entire mucosa is rolled out through the meatus, so that on separating the labia a deep red tumor with a slit in the centre representing the orifice of the urethral canal is visible. In urethral caruncle the projection is from one aspect of the meatus, and in new growth the urethra surrounds the growth instead of being in the centre. In prolapse of the bladder through the urethra, there is no orifice in the projection and a sound will determine the origin of the prolapsed portion.

The case here reported occurred in a school girl seven years old. One year ago she had pneumonia and had been well since. The child stated that she was kicked in the vulvar region two weeks before any symptoms were noted. Four days prior to consultation she complained of an itching and burning in the vulva and a smarting on urination. The mother noticed bloody stains on the child's underwear. There was no interference with or frequency of urination and no marked discomfort. The presence of the blood stained underwear led the mother to bring the child for examination.

A general physical examination revealed no abnormalities. On inspection of the vulvar region, a deeply congested mass was visible occupying the whole space between the labia, overlapping and hiding the hymen. This mass had an irregular longitudinal slit in the centre, was slightly eroded at one portion, and was exquisitely sensitive, bleeding readily on being touched with a cotton tipped applicator. On passing a catheter through the orifice, clear urine was withdrawn.

An attempt was made to replace the prolapsed membrane by applying to the mass a solution of two per cent. novocaine containing five minims of adrenalin to the ounce, to overcome the sensitiveness and shrink the congested tissue before trying to push the

everted membrane back into the urethral canal. This was found to be impossible. The child was then put to bed, and continuous applications of a solution of alum acetate were used in the hope of reducing the size of the mass and so permitting reposition. This also failed. After two days of this treatment operation was performed under a general anesthetic.

The operation consisted of excising the prolapsed portion and approximating the cut edges by interrupted sutures. A retention catheter was inserted and left *in situ* for two days. After its removal the patient voided without pain or difficulty. Pathological examination of the tissue removed showed the presence of subacute inflammation.

Two months after the operation, an examination showed an external meatus which appeared normal, there being no evidence of narrowing of the meatus, or recurrence of the prolapse. At no time since operation has there been any urinary complaint.

151 West Seventy-seventh Street.

A New Method (Cultural) in the Treatment of Chronic Suppurations, Particularly of Bones

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Chicago

The method of treatment of chronic suppurative processes, especially of bone, by a compound of the nitrates of aluminum and potassium has now received an extended trial at the American Hospital (three years); and the results have been observed in a sufficiently large series of cases (about 146) of all degrees of chronicity and severity, to warrant definite conclusions regarding the value of this method.

Details concerning the preparation of aluminum-potassium nitrate compound have been already published (1). Succinctly, the compound has been devised for the purpose of utilizing the wellknown oxidizing properties of potassium nitrate, while at the same time avoiding its macerating and irritative properties. The nitrates of potassium and aluminum are combined in the proportion of the molecular weight of one molecule of aluminum nitrate to three times the molecular weight of potassium nitrate. These are dissolved in hot nitric acid and a double salt crystallizes out on cooling which contains thirty-one per cent. aluminum nitrate, forty-four per cent. potassium nitrate and twenty-five per cent. waters of crystallization.

The product is neither a bactericide nor a germicide. It has been determined experimentally (and verified clinically) that it really assists and intensifies the growth of bacteria (Fig. 1). Its therapeutic value, therefore, is based upon an entirely different principle than those of ordinary antiseptics and of the dyes which aim at inhibiting the growth of bacteria.

Aluminum-potassium nitrate can be used in the treatment of any deepseated chronic suppurative process, but it is, perhaps, especially effective in processes with a discharging sinus, such as an old chronic osteomyelitis. We have employed it not only in osteomyelitis but also in tuberculous bone abscesses, carbuncles, furunculosis, various wound infections, gangrene, and other conditions..

Therapeutically the nitrate compound is used in a medium of sterilized rolled oats and is applied directly to the skin over the affected area without the interposition of gauze or any other medium. The dressing is renewed as soon as it becomes saturated with secretions (at least once in thirty-six hours).

The characteristic effects of the application are first, the appearance of an erythema manifest within forty-eight hours. This is followed later by the appearance of vesicles and pustules containing purulent fluid, these vesicles being limited to the skin covering the underlying suppurative area. This reaction continues as long as infection persists in the underlying tissues. When the pathological process is cured, no further reaction will take place. In other words, if the dressing is applied over a normal area

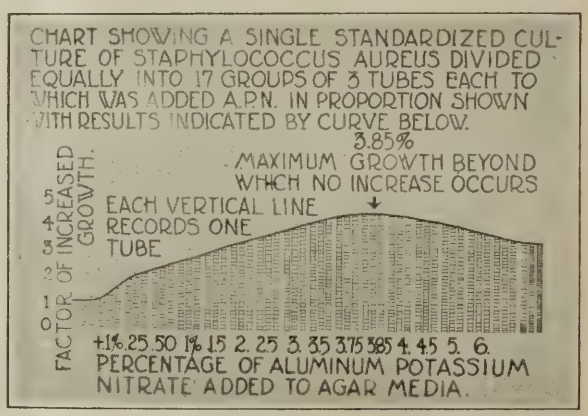
CHART SHOWING A SINGLE STANDARDIZED CULTURE OF STAPHYLOCOCCUS AUREUS DIVIDED EQUALLY INTO 17 GROUPS OF 3 TUBES EACH TO WHICH WAS ADDED A.P.N. IN PROPORTION SHOWN WITH RESULTS INDICATED BY CURVE BELOW.
3.85%
MAXIMUM GROWTH BEYOND WHICH NO INCREASE OCCURS
EACH VERTICAL LINE RECORDS ONE TUBE
FACTOR OF INCREASED GROWTH.
0 1 2 3 4 5
+1% .25 .50 1% 1.5 2. 2.5 3. 3.5 3.75 3.85 4. 4.5 5. 6.
PERCENTAGE OF ALUMINUM POTASSIUM NITRATE ADDED TO AGAR MEDIA.

Fig. 1.—Chart showing single standardized culture of staphylococcus aureus divided equally into seventeen groups of three tubes each, to which was added aluminum-potassium nitrate in proportion shown with results indicated by curve below.

the typical reaction does not occur. The characteristic reaction is especially marked in cases of osteomyelitis with a discharging sinus. Here a thin serous discharge is soon converted into a marked purulent discharge containing vast numbers of polymorphonuclear leucocytes, even before the appearance of a skin reaction.

The phenomena just described suggests that the mode in which the aluminum-potassium nitrate compound acts is by dialysis through the skin. Some element from the dressing must dialyze through the skin to the deeper tissues and call forth an increased leucocytosis expressed in terms of a voluminous pus

discharge; and, as a matter of fact this was proved experimentally before the clinical applications of the compound. There is a rapid autolysis and liquefaction of the pathological products within the diseased area. This is to a great extent due to the action of nascent oxygen on the diseased tissues. The nascent oxygen is probably derived from the splitting of the nitrate ion in its passage through the skin to the deeper tissues. The nascent oxygen does not alter normal healthy tissues, however, but tissues infected with organisms are attacked by the compound which accounts for the selective action of this preparation in acting only on diseased structures.

Perhaps the most significant therapeutic action of the compound, however, is that exerted on bacteria. It has previously been mentioned that the action is not bactericidal. Apart from the fact that the compound only produces a reaction where pathogenic organisms are present there is also an increased bacterial count in the exudate during the initial period of treatment, but the important fact is that the virulence of the organisms is reduced in proportion to their increased rate of propagation. I have, therefore, named this method the cultural method; for the body of the patient is the host for cultural propagation of the invading organisms. The effect of this is at the same time to reinforce the resisting elements of natural defense as evidenced by the increased leucocytosis and phagocytosis. The rapid autolysis at the site of the lesion gives relief by the rapid elimination of noxious products, which were absorbed prior to the institution of the treatment, so that a secondary systemic reaction follows expressed by a betterment of the general state.

Total number of cases treated	116
Total number of cases discharged cured	70-60 per cent.
This does not include cases still under treatment	
Cases discharged improved	10-9 per cent.
Cases in which no change was noted	17-14 per cent.
Cases still under treatment	19-18 per cent.
Average duration of treatment	11 1-3 weeks
Age of patients—youngest 2½ years—oldest 76 years.	
Sexes—males, 64	55 per cent.
females, 52	45 per cent.
Period—September, 1922 to September, 1924.	
These cases were not selected but accepted as presented.	

Since the initiation of this treatment at the American Hospital of Chicago, more than one hundred cases of chronic suppuration of various kinds have been submitted to it. Approximately half of these were mixed infections, the predominating organisms being the staphylococcus aureus, the streptococcus, the bacillus pyocyaneus and various saprophytes. The lesions included osteomyelitis of various grades of severity both traumatic and hematogenic, bone tuberculosis in which secondary infection was an added complication, furunculosis, gangrene and various postoperative wound infections. Many of these were old and inveterate cases which had resisted surgical and other treatments. In some cases the indication was frankly for surgical operation and the aluminum-potassium nitrate treatment was applied as a preliminary to such treatment, but it was a remarkable experience to find that in a large number of such cases the results obtained from the nitrate dressing were such as to obviate any further surgical treatment.

FIG. 3a.—B. R., Case 746. Female, age seven years. Osteomyelitis of second metatarsal. X ray taken at time of beginning aluminum-potassium nitrate treatment, October 27, 1924.

FIG. 3b.—B. R., Case 746. After one month's use of aluminum-potassium nitrate treatment, November 25, 1924.

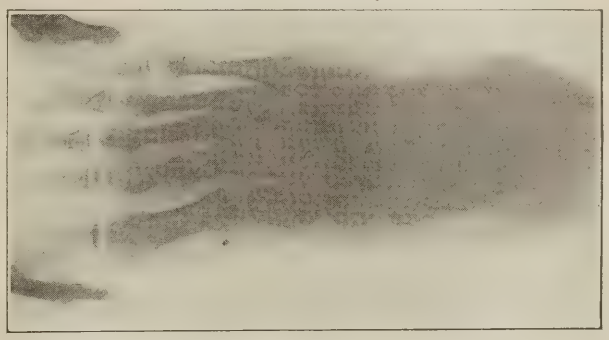

FIG. 3c.—B. R., Case 746. After two months' use of aluminum-potassium nitrate treatment, December 26, 1924.

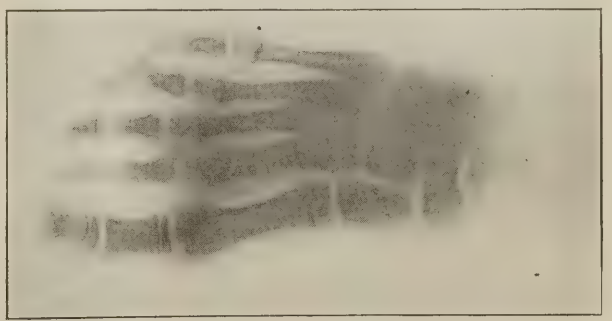

FIG. 3d.—B. R., Case 746. After three months' use of aluminum-potassium nitrate treatment, January 27, 1925.

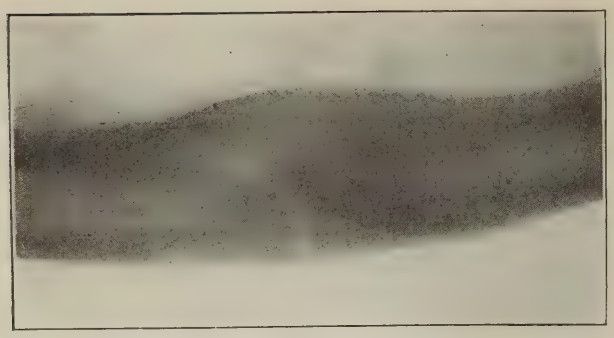

Fig. 4a.—B. M., Case 751. Male, age twenty-four years. Osteomyelitis of femur at site of former fracture (two years earlier). Note defect in callus. September 15, 1924.

In more than seventy-five per cent. of this series of cases the patients became ambulatory and able to pursue their avocations, coming to the hospital only for dressing, and at least fifty per cent. were clinically cured (Fig. 2). These results are strikingly remarkable when they are contrasted with the results obtained by surgery alone in the past. The repeated

Fig. 4b.—B. M., Case 751. After sixty-one days of aluminum-potassium nitrate treatment. Note clearing up of callus defect. November 15, 1924.

surgical operations, long hospitalization, loss of employment and invalidism with the attendant expense and discomforts have been obviated.

I do not mean to imply that the aluminum-potassium nitrate treatment is indicated as a substitute for rational surgery when this is clearly called for as in acute fulminating types of infection; nor that it

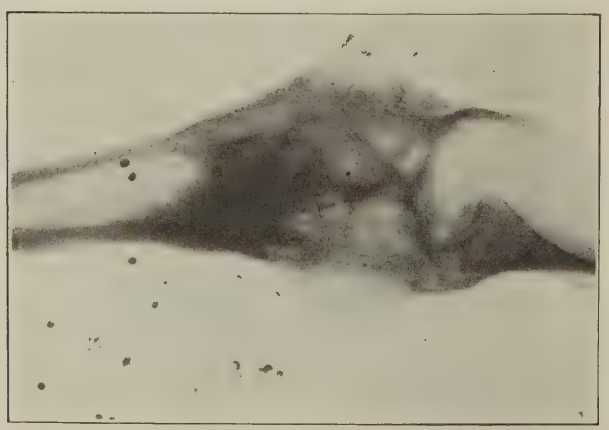

Fig. 5a.—L. C., Case 696. Female, age forty-three years. Osteomyelitis of left knee (gunshot wound eight years earlier). X ray taken at time of beginning of aluminum-potassium nitrate treatment. Note buckshot in soft tissues. March 5, 1924.

will always preclude surgical interference in chronic cases, but the treatment is indicated, either as a preoperative or postoperative procedure, in all badly infected cases especially of the chronic type, and it is particularly applicable to these cases which have

Fig. 5b.—L. C., Case 696. Appearance at time of beginning aluminum-potassium nitrate treatment. March 5, 1924.

resisted surgical and other treatments. As in my own series of cases preoperative treatment will, I believe, very frequently obviate operation and when operation must be carried out it will be under better

Fig. 5c.—L. C., Case 696. Appearance after two months of aluminum-potassium nitrate treatment, May 4, 1924.

conditions and the postoperative course will be greatly shortened.

In conclusion (and these conclusions are borne out by other investigators who experimented with the method clinically, notably Strauss, Kreuscher and

Sherman) I am convinced that with this form of treatment chronic suppurative conditions will often yield excellent results. In frankly surgical cases (acute osteomyelitis) the treatment is a powerful adjuvant in rendering the surgical procedure more efficacious. (Figs. 3a and 4b).

A few illustrations are given to show the clinical course of lesions under this treatment. These illustrations need no explanation as they fully convey their own story; they are fairly typical of the general run of cases treated.

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AMERICAN HOSPITAL.

Interrelationship of Physician and Dentist*

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The paradoxical relations between medicine and dentistry have been the theme of discussion at many dental meetings during the past few years. The earnest and sincere discussion of the existing state of affairs has been educational, and therefore provocative of much good.

In furtherance of this enlightening propaganda, I wish to present some of the dental aspects of this question.

The teeth, gums, pericementum and other dental structures are part of the body, nourished and controlled by the same general factors which similarly provide for the remainder of the body. Notwithstanding these facts, the degree of doctor of medicine is conferred without imparting to the recipient anything like a proper education in the anatomy, histology, physiology or pathology of the dental tissues. With such a hiatus in the medical curriculum, it is impossible for the recent graduates properly to differentiate between good and bad dentistry. All praise to the few physicians who, realizing this great defect in their education, have taken the time for intensive postgraduate study of dentistry. However, the number of such physicians is so few that we can discuss this subject without considering this minor element.

The physicians who specialize in nose and throat, eye and ear, genitourinary diseases, etc., after a grooming in general medicine, devote their entire time to portions of the human body that have no closer relations to health and disease than does stomatology.

In every medical college, the underlying principles of the physiology and pathology of these other specialties are not only taught, but the student must pass an examination on practically every specialty except dentistry.

In 1909, at the meeting of the International Medical Congress in Budapest, it was my great pleasure to visit one medical school which met this essential. The medical department of the University of Hungary requires the medical student to take a twelve weeks' course in the principles of dentistry and subsequently to pass a satisfactory examination in the dental department of the university. This does not, however, entitle him to practise dentistry. For this purpose he must graduate from the dental department, the curriculum of which compares most favorably with those of our own dental schools. In order to matriculate for this course he must, however, first be a recognized graduate in medicine.

This belittlement by medicine in our country of the importance of the dental tissues and organs is largely due to the fact that our dental colleges graduate men in dentistry who do not possess the degree of M.D. They endeavor to compensate for this by teaching the dental students the principles of general anatomy, physiology, embryology and pathology from the dental viewpoint. This not only falls far short of the needed education, but has brought about such differences in nomenclature as to make it often difficult for the dentist to make his pathological terms understandable by the physician. They do not speak the same language. This must be the real reason why the physician so rarely calls the dentist into consultation, whereas if the heart or the throat, or the eyes, were the seat of disease, the family doctor would ask the service of one specializing in one of these fields.

However, the dental curriculum is improving rapidly, and while it may still fall short in many essentials, the failure of the physician to seek dental consultation in dental cases constitutes no palliating circumstance. The community at large suffers greatly by this neglect of those whom the law has recognized as qualified to alleviate suffering, to prevent further disease, and to cure dental lesions.

During the past few years physicians have commenced to recognize many diseases resulting from dental focal infections. At first glance it would seem in the light of these developments that the doctor would see the importance of dental consultations.

In my early practice in the 80's and 90's, the difficulty of obtaining a proper consultation with the family physician worried me greatly. They had a unique way of resenting a dentist endeavoring to add to their dental education, even though he might be a regular M.D. who had given ample time and study to the general practice of medicine. With the great hope of causing the physician to seek out the dentist for consultation in dental cases, I kept on showing the possibilities of arthritis, nephritis, diabetes, heart lesions, and other conditions starting from dental focal infec-

*Read before Kings County Dental Society, January 29, 1925.

tions. In June, 1896, I published in the *Dental Cosmos,* "The Oral Expressions of Malnutrition," which in the clinical notes of various cases showed where disease of the mouth was the result and not the cause of constitutional derangement.

When finally the value of the x ray came to be recognized as a diagnostic factor, we hoped that now surely the family physician would come to the dentist for consultation and for a correct interpretation of the picture as it bore on the jaw and its adjacent parts. You all know that, on the contrary, when diagnosis is obscure, the doctor, instead of having the dentist examine the patient, sends him to an x ray laboratory and absorbs the interpretation and advice thus sent by men as little fitted to interpret the röntgenogram in these situations as is the doctor himself. As a result, thousands of teeth which should have been saved have been extracted.

The County Medical Society of New York is giving weekly lectures this year on the value of early diagnosis of grave diseases. In this course are interspersed lectures by specialists, showing the effect of commencing deviations from health in their respective specialties. There is, however, in the course no provision for consideration of lesions of the dental tissues, and yet I say without fear of any serious logical denial that the changes in the macroscopic condition of the gums make this region a highly valuable diagnostic aid in the earliest periods of disease.

The time has arrived when this breach between medicine and dentistry must be healed. Meetings like the one this evening have failed to accomplish this object. What shall we do? Must the dentist resort to publishing this incongruousness in the public press? It is my firm belief that some such severe remedy must be applied to insure to the public the meed of attention which the doctor should accord the dentist when the former has to deal with dental disease, real or imaginary.

Let us consider in detail the different values that arise from a medicodental consultation. They naturally present a different aspect, viewed on the one hand strictly from the side of the medical practitioners, and on the other strictly from a dental viewpoint. It will be our part of this program to take up these different points of interest and present them more especially from the dental viewpoint.

It has always been admitted that the greatest values in every department and branch of medicine are to be found in what is known as preventive medicine. In this respect dentistry has long since coincided, and the efforts of the dentists in preventive dentistry have received the attention of the brightest minds in our specialty.

In considering this aspect of the case, our first thought must lead us to the promulgation of data for improvement in the teeth of future generations. The result of all of our research work in regard to the etiology of caries of the teeth leaves us today with a positive conviction that the general nutrition of the individual plays an important rôle in this respect. We know that teeth that are erupted with enamel in which no defect can be found are in the best state of defense against caries. We know, furthermore, that for the production of such teeth it is essential that the diet should be of such a nature as to carry with it the proper modicum of inorganic material that is found in the makeup of the teeth. As the formation of the teeth proper commences many months before birth, the attention of the observant and scientific dentist has been always directed more or less towards the prenatal diet of the mother. This question is also receiving the careful attention of the physician. The result of this care is seen today in that the child whose mother is under the care of an up to date physician has better teeth, and no inclination to rickets. The literature of dentistry shows that this subject was considered in its present accepted manner long before it was seriously taken up by the physician. The large percentage of rachitic children has brought about a study of this subject which has insured a more scientific diet to the pregnant woman. As a result the percentage of children under such care who displayed a tendency to rickets has decreased perceptibly. This diet consists in a proper amount of lime and phosphates to be taken in the food of the mother. Whatever tends to the decrease of a tendency towards rickets necessarily tends to a better dental structure for the child. The two conditions go hand in hand, and in this respect there can be at the present time no difference between the physician and the dentist.

Forty years ago there was a large class of medical practitioners who were deliberately depriving mothers in their prenatal diet of lime and phosphates in order to obtain an easier and less painful delivery at childbirth. They were deliberately advising procedures in diet resulting in the birth of children whose osseous framework and tooth structure were starving from lack of inorganic material. There is no doubt that some of this form of advice is still being given and every effort should be made to stamp it out effectually. To the sane, medical mind, practice such as this is positively nothing short of criminal.

A correct dietary regimen should be followed up from infancy through the entire formative period of a child. The growth and development of the child in normal condition is coequal in all of its parts. Both the baby teeth and the permanent teeth, as well as the alveolar structure in which they are imbedded, develop in the same ratio and proportion as the rest of the body when the machinery of the human mechanism is working in a normal manner.

During the first eighteen months the baby obtains its requisite amount of inorganic material in the milk contents. From that period on, the value of cereal foods in the child's daily ration cannot be overestimated. The enormous increase in cereal foods in the past few years illustrates how vast an improvement has been reached in child nourishment as compared with years ago.

In addition, we must not overlook the value of plenty of sunlight, orange juice, and as the child grows the need of foods containing sufficient vitamins. The science of the child's dietary is so well understood today that there is no excuse for the starving children of thirty-five years ago whose

death certificates bore the incorrect report of death from rheumatism.

In 1886, before infantile scorbutus had been established as the correct term instead of rheumatism, the parents brought to my office a boy aged eighteen months. The enamel had been entirely lost from the four upper incisors. The gums were a cherry red, soft and flabby, and there was a profuse discharge of pus from the gums. The pulps of all four incisors were exposed, and the child was consequently in constant agony. The handling of the arms or legs caused additional screams of pain. Could the pulps be removed? "Certainly," I replied, "but that will not save the child's life. Why not seek the cause of this lack of nutrition?" After a most thorough examination, I found that the diet consisted solely of what was known as Swiss prepared cream. This was at once stopped and pasteurized cow's milk, not too rich at the start, orange juice four times in twenty-four hours, together with a well simmered barley broth carefully strained, was fed the child. Under chloroform the pulps of the four teeth were removed. Recovery was rapid. This patient is now a man of fine physique, with a full set of fairly normal teeth of excellent structure.

Wherever, from congenital causes, the child has rickets or a tendency to rickets, it is certain that the structures of the teeth are suffering commensurately. In addition to the cereals, the use of codliver oil, which has been so advantageous in rickets, becomes equally helpful in improving the tooth structure of the child.

The importance of keeping the deciduous teeth in a clean, healthy state, free from caries, is no less great than the care we should bestow on the permanent teeth.

The real importance of this ideal care of the deciduous teeth is not only not appreciated by the average physician, but also by the average dentist. During the developmental period of the child, everything tending to interfere with nutritional conditions leaves a marked effect upon that particular stage of the dental tissues. Any type of disease peculiar to children leaves such an indelible imprint upon the jaws and is the cause of perhaps stoppage in development of a part of the jaw, or lack of laying down of enamel substance to such an extent as to at once direct the attention of the dentist to the fact that something is radically wrong and that it is now his duty to call the attention of the physician of the child to the necessity of a thorough physical examination. It is this stoppage of development of the alveolus that is at the bottom of almost all of the irregularities of teeth which occasion so much distress and necessitate so much professional service later on.

In like manner, excessive deposits of calculi are at once a marked indication of insufficient elimination. In children between the ages of six and ten it is not uncommon to find an extraordinarily large amount of salivary calculus on the lingual side of the lower incisors. This heavy incrustation is an absolute indication of an acute nephritis which is impairing the eliminative properties of the kidneys, so that we obtain this marked increase in elimination through the salivary ducts. By means of proper treatment this is easily cured in children and consequently it is of the utmost value for the dentist to call attention to such a condition of affairs.

Any impairment in the circulation at the outset leaves an imprint in the shape of some form of diversion from the normal appearance of the dental tissues. This is due to the fact that the circulation which nourishes the dental tissues is by far the most extensive capillary circulation in the body. On this account it is important that the dentist with his keen powers of observation and differentiation of color and form, should make himself so thoroughly conversant with the appearance of normal dental tissue that he can immediately detect the slightest change from normality. As a doctor of the teeth, he should so train his mind as to fix the dental organs as part of the entire organism, and to assume that it is one of his greatest duties to his patient to inform the physician who has charge of the general health of the patient when he observes that something in the circulation has made an abnormal imprint upon the dental tissues.

The dental tissues as an absolute index of any diversion from health is by no means confined to youth. What is still more significant is that different abberations from normal leave different impressions upon the dental tissues, so that we have in the mouth a means of diagnosing the incipiency of many types of disease, if we only have the ability to correctly interpret their different expressions on the gums, the alveoli, the teeth, the salivary glands and the mucous follicles. The well known blue imprint on the gums is diagnostic of the administration of mercury being carried to a point of toxicity. This has been recognized in medicine for more than a century. If the practitioners in medicine had not ceased to make a study of the dental tissues, they would have long since realized the remarkable diagnostic value possessed by the eye of the experienced practitioner in a proper mouth examination.

In tuberculosis of the lungs, which is perhaps the most noteworthy of all diseases for its debilitating effect on the system, the mucous follicles which in health are quiescent and nonapparent, become extremely active. Their action can be compared to that of the sweat glands, only this activity starts up long before it is noticeable upon the derma. At the beginning of tuberculosis these follicles begin to excrete a fluid, and as the disease progresses this excretion becomes more and more excessive, keeping pace, as it were, with the inroads of the infection upon the lung tissues.

In diabetes the gum tissue around the necks of the teeth at once degenerates into a spongy condition which bleeds very easily, and which fails to react properly to surgical measures. This marked degeneration of the gum tissue manifests itself in various types, according to the character of the diabetes and the stage of the disease.

In nephritis there is a condition present that is almost the opposite of this. Here we find a tendency to a line of hypertrophy of the gum. Following the scalloped margins of the necks of the teeth on their lingual surface, the color of the gums becomes blanched in exact contradistinction to the intense redness which so markedly distinguishes its condition in diabetes.

When the heart fails to act in a normal way, it leaves a characteristic imprint on the gum. If there is a lack of oxygenation, it is at once apparent in the intense ruby colored condition of the entire gum surface. On the other hand, when the heart lacks its normal amount of pumping capacity, we find a distinct line of demarcation about one eighth inch above the necks of the teeth. The portion of gum approximately one eighth inch from the necks of the teeth has a pulplish hue, due to the inability of the capillaries to empty properly into the venous system. Above this line, in marked contrast, is seen the normal gum tissue with its pale pink color.

It is hardly necessary to speak of the diagnostic value of the mouth in syphilis because the specialists in this line have been compelled to recognize the same and consequently the mouth symptoms of lues have been more or less taught to the physician.

The undernourished pregnant mother invariably shows one or more erythematous patches on the lingual surfaces of the jaw.

All of these values have been but faintly studied and constitute a wonderful field for future research.

IMPORTANCE OF THE EARLY DIAGNOSIS OF DISEASE

The earlier a disease is diagnosed, the better the physician is able to render aid. If there were nothing else to be said upon the subject, the possibility of the recognition of the very beginning of different types of malnutrition by an intelligent observation of the mouth, should make free consultation between the observant dentist and the family physician something of such vital importance that it would be freely sought by the physician and generously tendered by the dentist.

It is not only a question of the dentist's being able to bring to the attention of the physician that a certain disease has started, but there remains in all these cases the question of what dental operations are feasible and under what circumstances certain dental procedures should not only be postponed, but are at times absolutely prohibitive. While there frequently exist different opinions as to the advisability of certain operations when the health of the patient is impaired, it is almost impossible to set down any well defined rule. Each case must be considered by itself, and this can only be done satisfactorily through the intelligent cooperation of the dentist and the physician.

While it is conceded that a great deal of harm is unquestionably done by dentists when the patient is laboring under the stress of different types of disease, there is another side to this question. Too often physicians peremptorily forbid all kinds of dental interference without an intelligent discussion of the subject with the dentist, whereas if consultation had obtained it would be determined that the dentist by performing certain operations could be of material aid to the physician. Too frequently during the progress of some curable disease the patient emerges with a set of teeth badly impaired by dental neglect during the course of such disease. The value of a healthy mouth with healthy teeth, properly functioning, is greatly underestimated by the majority of medical practitioners. It is of paramount importance, after a cure is effected, that the individual should be able to resume his method of living with his mouth in such a condition that his health can be properly maintained. The field of surgery is strewn with myriads of teeth that have been ruthlessly and unnecessarily removed, an irretrievable loss to the individual in maintaining a proper condition of general health.

When the mouth becomes infected, the physician should freely consult with the dentist as to procedure. Too often a beautiful face has been marred unnecessarily by permitting an alveolar abscess to open externally, yes, sometimes deliberately encouraging its external exit where the etiology of the condition has been entirely overlooked. It may not be amiss to call attention to the strong tendency among a certain class of practitioners to let no patient escape from their office into that of some other practitioner. These men frequently treat fractures of the jaw and minor mouth conditions. When they do no serious injury it is a matter of pure good fortune. The field of oral surgery is one that is well defined, and should be left to the man who is qualified by study, application and experience to obtain the best result in this particular character of work. Often the dental field approximates that of some other specialist. Under such circumstances, if the best interests of the patients are to be considered, the two men should work harmoniously together.

A PROPER UNDERSTANDING OF MOUTH INFECTION NECESSARY

There is nothing that should be more clearly understood by the physician than mouth infection; unfortunately this is not the case. Mouth infections cover a variety of conditions that vary so greatly in their etiology, symptomatology and prognosis, that it is impossible for even the average dentist who is not a physician to have a correct understanding of all of them. How then is a physician not versed in the mouth to have a proper comprehension of them? For instance:

The term "dental focal infection" is used in a very indifferent, if not to say ignorant manner, by a great many physicians, and also by some dentists. A dental focal infection can be best described as a circumscribed infected area in the alveolus which has no drainage. This is in exact contradistinction to the ordinary classic alveolar abscess and different types of mouth sepsis that generally come under the head of pyorrhea alveolaris, as generally understood by the physician, and is spoken of as periodontoclasia by a great many dentists. In the alveolar abscess and in different types of perioclasia (or pyorrhea alveolaris), pus freely exudes into the mouth and is more or less swallowed by the individual and passes through the alimentary canal. While it has a more or less irritating effect upon this tract, and while a certain proportion of it may be absorbed, it can never be considered as dangerous to life itself.

The dental focal infection is located in the alveolus around the ends of the roots of the teeth. This infection is of so low a grade of inflammation that it never reaches the stage of suppuration. On that account there is an absolute absence of pus. The pathogenic organisms, however, keep on manufacturing toxins which are continuously absorbed by the circulation. It is only the inherent resisting forces of the patient thus affected which combat the

insidiousness of this infection. Unrecognized and untreated, it becomes only a question of time when it ceases to be local. One or more of the vital organs is invaded with disastrous results. In other words, dental focal infections may be the cause of heart disease, of nephritis, of diabetes, of arthritis, of appendicitis, or other conditions. The enumeration of this list is only limited to all of the diseases that can be caused by continued toxemias of a low grade. Perioclasia (or pyorrhea) on the other hand is never the direct cause of any of these diseases. We may have a dental focal infection which has produced nephritis, or diabetes, from which in turn has resulted a distinct pyorrhea alveolaris, but the pus exuding from the gums in these cases never has had any connection with the etiology of the nephritis, but is simply a symptom of this disease. This cannot be too strongly emphasized because it is so often misapplied and is so frequently confused by the physician with dental focal infection; and yet in the proper handling of the patient it is of the utmost importance that the differentiation should be well known. A great many physicians, when they see pus in the mouth, have a way of referring to it as pyorrhea alveolaris, and of telling the patient: "You had better see a dentist and tell him you have pyorrhea."

CASE REPORT

A case occurring in my practice some twenty-five years ago may be apropos:

CASE.—A woman over fifty years of age, fell down a flight of steps and struck on her face with a great deal of force. A few days later, her physician finding her mouth overflowing with pus, sent for a prominent surgeon. He examined her mouth and said to the physician: "What was the use in sending for me? This is a case of pyorrhea. Turn her over to a dentist." Upon examining the patient I found a remarkable case of comminuted fracture of the jaw. I say remarkable because when I got through picking out the fragments of jaw bone that was fractured, there were between four and five hundred pieces of bone. This was the cause of the great amount of pus, and when these fractured alveolar fragments were all cleaned out, the pyorrhea was cured.

Knowing the surgeon as well as I do, I am convinced that he unwittingly allowed a patient to pass through his hands which he would only too gladly have attended to had he made a correct diagnosis.

EVILS OF INCORRECT INTERPRETATION OF RÖNTGENOGRAMS

Friction between the dentist and the physician of late has been created by the tendency of the physician to have the mouths of his patients x rayed by the dental laboratories, most of which are run by medical men and others who have no dental training, and who furnish the physician with not only a dental interpretation of the röntgenograms, but with advice as to procedure as well. This has unquestionably resulted in the unnecessary loss of thousands of teeth, which means the ruthless interference with the proper function of perhaps the most important part of the nutritional system of the body. Serious attention should be paid to the correction of this evil affecting the community. When it becomes a question of investigating the condition of the mouth by means of the x ray in order to endeavor to make a correct diagnosis in obscure cases, it should be the bounden duty of the physician to call into consultation the dentist of the patient. The dentist should be asked to furnish proper röntgenograms, and his opinion of them should be given in a consultation that should carry with it the same significance that a consultation with any other specialist would convey. Where the patient has no dentist and the physician desires the aid of the x ray, he should at least see that the patient goes to a laboratory where a properly trained dentist can furnish him with the röntgenograms, and their interpretation. It then rests with the physician to determine if he is satisfied with this laboratory interpretation, or whether it should be fortified by other dental consultation.

The physician is able to advise, see and treat fifteen to twenty people, occupying a span of time during which the dentist may be doing some simple ordinary service for one individual. The average physician has but a poor concept of the amount of time which the dentist gives to each individual case. It is unquestionably true that a certain type of man becomes a charlatan in any branch of medicine, whether in dentistry or some other specialty, and will take advantage financially of his patients in the same manner that a crook operates. This is no excuse for the frequent criticism made by medical men in regard to the fee of certain dentists concerning the value of whose services they are wholly ignorant.

Frequently I have heard medical men of a very high type make these criticisms, where if they knew the amount of time conscientiously occupied by the dentist, they would realize how unjust have been their accusations. Good workmanship and valued service in dentistry is more frequently underpaid than overpaid.

CONCLUSION

No matter what a man's vocation or profession, proficiency is only possible through basic knowledge and through opportunity practically to exercise the same. The more the dentist knows about medical principles and medical practice, the better he will be able to serve his patients. By a parity of reasoning, the more the medical doctor knows about dentistry, the better he will be enabled to recognize obscure conditions due to faulty dental conditions. In the present stage of the practice of these two branches, the dentist knows too little of medicine and the physician is too unfamiliar with dentistry. To obviate the conditions resulting from this situation it is the bounden duty of each of these groups of practitioners to seek counsel from one another, thus aiding in the conservation of the health of the public. The duty of each is plain. Let us do our part in eradicating the disparities.

It is asking more than we can expect that evils of this nature be obliterated in a day, but if these few words will aid in bringing about some little improvement in the relationship of dentist and physician, the aim of the writer will have been accomplished.

38 EAST SIXTY-FIRST STREET.

The Ultimate Cause of Most Apoplexies*

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This presentation is the result of stumbling on a rather constant phenomenon found during the course of a close observation of the mouth and throat of every patient seen, both in hospitals and private practice, during the past four years.

The general finding of evidences of influenza, past or present, in so many mouths, at first did not attract our attention until we were able to connect up these with the other findings which at first seemed accidental; particularly was this so with vascular lesions in the brain. On examining the supposed accidental findings, it was found that the signs and symptoms of influenza were almost always present in a patient suffering from the brain lesions of apoplexy, so a connection seemed assured. A similar connection had previously been determined by the author with regard to the association of most of the attacks of cardiac decompensation and influenza. Of this cardioinfluenzal incidence there is not the slightest doubt in my mind, and I have seldom seen a cardiac breakdown that was not associated with slight rise in temperature, and the signs to be described later.

The cause of an apoplexy, in the last analysis being a vascular lesion, was logically only one further step. Why does the patient go to bed apparently quite well, and wake up paralyzed? The old idea that some added strain, as lifting a weight, thus inducing a rise in pressure, consequently causing the break in the vessel, is exploded. But why did the apoplectic attack occur last night and not one or two months ago?

The older pathology predicated that in the last analysis, vascular degeneration or disease was largely a progressive steadily advancing lesion. The present pathological conception of most degeneration and disease is that it is the result rather of a series of acute insults or diseases. But what is the disease that causes the last straw as it were? The usual pen picture that a stroke is due to increased arterial tension producing hemorrhage by the giving way of a bloodvessel, is quite useful to use as a figure of speech to convey to the mind of the layman what has happened in strokes, but it will scarcely satisfy the physician as to the mechanism of occurrence of the most common cause of hemiplegia, because, in the last analysis, most hemiplegic attacks are thrombotic rather than hemorrhagic.

THE EXPLANATION OF THE CROWNING ATTACK

In disease of any kind, one visualizes an outpouring into the blood of organisms of one sort or another. During the struggle between the disease and the individual, the blood is surcharged with organisms that are constantly being destroyed. It is quite a reasonable assumption, that finding a diseased vessel such organisms will lodge there, and that an already degenerated vessel has just such an affinity for them and particularly is there a chemotactic attraction for them in the lenticulostriate artery. One meets with a similar vascular phenomena in the association of influenza with external hemorrhoids, phlebitis, and ocular conjunctival hemorrhage occurring, as they so usually do, in the course of a head cold or influenza. Another occurrence of a somewhat similar phenomena occurs in the mycotic aneurysms so commonly present in cerebral hemorrhage.

As to why hemorrhage occurs in one group, and thrombosis in another, I have no data, but from some observations I believe it to be a family idiosyncrasy. Whether the primary cause of the faulty vessel is arteriosclerotic or luetic there is the same frequency of accompanying head colds. Of course the embolic phenomena due to a vegetative endocarditis, are quite easily understandable on a similar basis. This latter phenomena, excepting in the cases of bacterial endocarditis, is almost always associated with an influenzal syndrome in the throat.

There are many other interesting facts to be noted in this connection. If a similar phenomenon occurs about or in a bloodvessel, as it does in epidemic encephalitis (an influenzal disease), one can readily visualize an explanation of the mechanism of production of the temporary hemiplegias, and temporary aphasias that one occasionally meets with in the course of patients suffering from high arterial tension. In the last two instances of this transitory form of hemiplegia that we have seen, we have noted the evidences of the accompanying signs of influenza. In this connection I wish to reemphasize that the temperature should be taken by rectum, thus the supposed cold skin of the patient will be shown to be a cloak for a rise of one half to one degree of temperature. The shock of the stroke will often lower, for a few hours, this temperature which has already been present for a day or two, but towards the end of the same day it will generally mount to a degree or more.

The objector will at once raise the question, How do you know that these signs mean influenza? and, How do you know that they are related to the attack when the patient denies that he has influenza? In this matter several general statements may be made which are not commonly known, that influenza is a periodically recurring disease, occurring every thirty years or more in pandemic form, and several times annually, much like the seventeen year locusts, as compared with average annual locust crop; that once infected the individual probably remains a potential host for the disease as long as he lives; or else has been sensitized to the disease; that there is a recurrence of the disease in the shape of a head cold every sixteen weeks, perhaps oftener, and with more virulent symptoms every thirty-two or thirty-three weeks (except when the date occurs during the summer, when the virulent attacks are usually absent); that at times these thirty-three weeks recurrences are severe enough to attract attention.

As to differentiating between a socalled head cold and influenza, I know of no criteria. Everyone has seen a mild head cold in one member of the family, so mild that no attention is paid to it, and a few days

*Read before the Section of Neurology, general meeting of the New York Academy of Medicine, April 17, 1925.

later another member of the family comes down with a severe influenza and diet of it, or its sequelæ, and one is unable to differentiate the mouth and throat of one of these cases from that of the other one. After several such experiences one loses faith in the old time distinctions between cold and influenza and grippe.

The frequent recurrences of head cold will be noted by all of you if you will take the trouble to go over your histories and count up in any patient the incidences of head colds. The hemiplegic denies the head cold; so do most of your patients, but a thorough inspection of the mouth and throat will convince the most skeptical. One in this way will often acquire an uncanny reputation for predicting an influenza at its onset, when there are no signs or symptoms excepting those that occur in the mouth.

Again, why does the hemiplegic generally die of a bronchopneumonia on the third or fourth day? What evidence have we that merely brain injury of itself should produce infection and disease of the lung? The mode of death in these cases exactly simulates that which occurs in an ordinary influenza (bronchopneumonia). How will we determine the presence of head cold or socalled influenza and grippe? If one examines the patient very carefully and looks in the mouth and throat he will be surprised to find one or another, seldom more than three, of the following signs or symptoms: 1. A slight rise of temperature, one half to one degree by rectum, which rises ever so slightly for three and one half days, then to fall and rise again for a three and a half day period (this temperature must be taken by rectum. 2. A congested throat, pharynx and anterior arch of the soft palate. 3. The uvula will be injected, often containing red papules. 4. Farther up in the soft palate will be very minute puncture hemorrhages, and sagolike bodies. 5. On the side of the mouth Steno's duct (provided the man has back teeth) is enlarged, swollen, with a red spot in the middle. 6. Occasional hemorrhagic pin point areas throughout the mouth. 7. The lips are often crimson. 8. The external conjunctiva is injected. 9. Sometimes the fingernails are cyanosed.

Of all of these signs the injection of the anterior pillar of the fauces, with injection of the external margin of the ocular conjunctiva and increased temperature are the most constant.

The question at once will be asked as to why one has no postmortem studies on these cases. In the first place, there is no settled agreement as to what organism is the cause of influenza, consequently this would undoubtedly render any such approach valueless, and the presence of secondary invaders would further fog the diagnosis.

It is merely because of the relationship between the phenomena of endocarditis and phlebitis and influenza that we have a basis for this presentation. The percentage of positive signs in hemiplegics in the course of the four years' observation was practically ninety per cent., and that is quite as constant a percentage of positives as are Wassermann or Widal reactions.

As far as I have been able to ascertain, both from conversation with neurologists and the literature, I have been unable to find a similar association noted. I do not believe that this concurrence of influenza and of stroke is universal, as there is "no" or "never" or "yes" and "ever" in medicine, but the presentation does serve to hold out some possible hope in the future if it is proved that this connection is real, for the hemiplegic who is now not a therapeutic problem. When at his bedside our hands are literally and figuratively in our pockets, and little is to be done for him. It is fair to assume that eventually some sort of specific will be found for influenza.

I am not prepared to claim any specific value for local treatment to the mucous membranes, although such treatment would seem at least logical in attacking the focus of the infection. One hopes that the future will reveal some sort of vaccine or serum, but at present there is no general agreement as to the value of either.

34 West Eighty-eighth Street.

Eosinophilia in Scarlet Fever.—V. Markovitch and M. Gueratovitch (*Presse médicale,* February 14, 1925) find that the eosinophilic reaction in scarlet fever is governed by the clinical form of the disease. Thus, eosinophilia is pronounced and reaches its acme in the mild forms of scarlet fever unattended with complications. In severe forms with complications, the eosinophiles are low during the acute stage of the disease and of the complications; along with improvement in the general condition a rise in the eosinophilic curve takes place. In the hyperseptic forms, running a fatal course, the eosinophiles are absent or normal in number; the system is overwhelmed and fails to react. In incomplete [fruste] cases of scarlet fever, the eosinophiles constitute an important diagnostic feature, alike at the onset and in later stages of the disease. In scarlatinoid erythematous rashes, if the patient is in good general condition and the eosinophiles are normal, the thought of a possible scarlet fever may be dismissed.

Functional Mental Disorder Due to Toxemia from the Bowel.—James Walker (*Lancet,* November 22, 1924) reports three cases of functional mental disorder due to toxemia from the bowel in which deceptive signs of organic diseases existed, including a case of hypochondriasis, one of toxic psychosis simulating clinically general paralysis, and one of functional mental disorder resembling a case of organic nervous diseases, in which alimentary toxemia is an important causal factor.

The following deductions can be made from the study of these cases: 1. The nervous system is susceptible to the influence of toxemia either of exogenous or endogenous origin. 2. Toxemia of intestinal origin is more frequent than is generally accepted, its deleterious action being more easily produced and more marked when the general health is either reduced by previous illness or the powers of resistance impaired by such agencies as heredity, personal neglect and malnutrition, and unhealthy environment. 3. Provided the toxemia has not produced definite organic changes, it is quite safe to give a good prognosis. When recovery is complete an attempt should be made to explain to the patient how the illness was caused, in order to ensure a more satisfactory mode of living and at the same time considerably lessen the chances of recurrences.

Instruments, Apparatus, and Clinical Notes

A SIMPLE ASPIRATING APPARATUS

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New York

One who has used the Potain aspirating syringe is familiar with the inconvenience caused by the small pump which is a part of the apparatus. A good vacuum is only produced after considerable effort. When pus is encountered it is with difficulty that it is aspirated, and, at its best, is a slow process of emptying a pleural sac. If a good vacuum could be created the Potain apparatus would be an efficient one. A mechanically driven aspirator is out of the question because of the bulk and the expense of such a mechanism. A simple and inexpensive suction device which is not bulky and easily portable is what is desired. It occurred to me that a Chapman filter pump, which is easily attached to any smooth faucet by means of a rubber connection, would be the very thing for the formation of a strong enough vacuum to empty quickly a pleural sac of its fluid contents.

APPARATUS

A glass bottle of two thousand c. c. capacity, Fig. 1-C, is made air tight with a rubber stopper through which two tubes are inserted. One tube to extend about a half inch below the rubber stopper and the other about an inch. A stopcock is inserted in the latter tube, Fig. 1-A. Rubber tubing connects this tube with the aspirating trochar, Fig. 1-N. The other tube is connected with a Chapman filter pump, Fig. 1-F. Between the tube and filter pump is inserted another small bottle, Fig. 1-S, which is similarly made airtight by means of a rubber stopper and two tubes. A mercury manometer, Fig. 1-M, with a scale in inches is placed between the two bottles. The connection is made with a T tube, Fig. 1-T. The horizontal part of the tube is connected with both bottles and the vertical part of the tube is attached to the mercury manometer. A stopcock is inserted on the filter pump side of the T tube, Fig. 1-B.

Stopcock A is turned off. Stopcock B is turned on. The water faucet is turned on and the water is allowed to run until a vacuum is obtained. This is indicated by the mercury being drawn up on the bottle C side of the scale. Stopcock B is turned off. The trochar is thrust into the pleural cavity and stopcock A is turned on. The exudate now flows into bottle C. It has been our experience to note that each few hundred c. c. of fluid reduces the vacuum by an inch of mercury. This perhaps is the reason for the failure of most aspirating devices. As the fluid volume increases in the bottle the vacuum decreases until there is not enough suction present to continue the process of aspiration. This can be avoided by opening stopcock B and having the faucet turned on with enough pressure to maintain the desired vacuum. For the evacuation of pleural transudates one inch of mercury is required. For exudates two to three inches of mercury is necessary depending upon the specific gravity of the exudate. For pus to flow in a stream not less than eight inches of mercury pressure is required. The amount of mercury pressure may be kept constant by the adjustment of the flow of water through the faucet. Bottle S is inserted to prevent any water being aspirated into bottle C from the tubing leading to the filter pump. This frequently happened when stopcock B was turned on and the suction in bottle C was greater than in the tubing. This would contaminate the exudate or pus in the bottle and interfere with its examination. If one could always remember not to turn on stopcock B before the faucet is turned on, bottle S could be eliminated.

The adaptability of this apparatus cannot be questioned inasmuch as there is a faucet present in almost every house. However, when a faucet is not present in the house of the patient, the vacuum in the aspirating bottle may be made at the office and the apparatus detached from the filter pump. If there is not sufficient vacuum to drain all of the fluid in the sac before the end of the vacuum (this may be foreseen by the smallness of the stream) the bottle is placed at a lower level than the thorax and stopcock B opened. Drainage will now go on by siphonage.

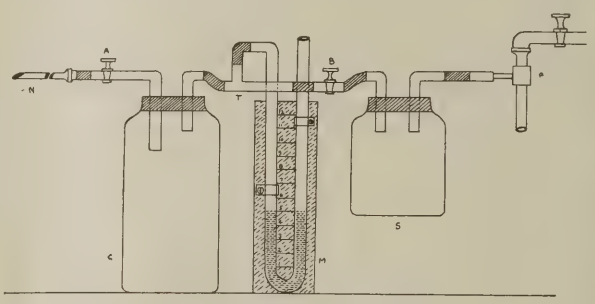

FIG.—Aspirating apparatus

It is best to have the apparatus attached to the filter pump. One can then control the withdrawal of the fluid with the pressure of the water going through the filter pump. The patient may be brought into the kitchen and placed on the kitchen table. However, should the patient be too ill to be moved, the following procedure may be carried out. A vacuum is made in the aspirating bottle. Stopcock B is turned off. The apparatus is detached from the filter pump and brought into the room of the patient. A needle is inserted into the pleural cavity and attached to the suction apparatus. Stopcock A is turned on and a stream of fluid flows from the pleural sac into the vacuum bottle. If the vacuum is not sufficient to completely drain the pleural sac the process of siphonage can be installed as described above. However, it is best to turn off stopcock A and place an artery clamp on the rubber tubing between stopcock A and the needle. Detach the apparatus from the needle and connect it again with the filter pump until a new vacuum is created. The apparatus is again attached to the needle and the process of aspirating the pleural sac is continued.

The apparatus has been tried out at the Metropolitan Hospital where I have a tuberculous service. It worked efficiently in simple pleural effusions and

in pyopneumothorax. It was possible with this apparatus not only to drain off the pus in a pyopneumothorax but also, by inserting into the upper part of the pleural sac another needle connected with a fountain syringe containing a weak solution of the tincture of iodine, to wash out the pleural sac. As rapidly as the fluid flowed into the sac the suction apparatus drained it out. This was continued until the fluid returned as clear as when it flowed in. This is a simple procedure of washing out a pleural cavity. I believe the same procedure could be applied to an empyema.

150 West Fifty-fifth Street.

A SIMPLE APPARATUS FOR BLOOD TRANSFUSIONS*

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Brooklyn

The following simple apparatus for the transfusion of blood by the vein to vein method was devised by me in order to reduce the difficulties of instrumental manipulation to a minimum and to obviate the possibility of a reflux of blood from the recipient to the donor. The machine consists essentially of two discs rotating one upon the other through an angle of 90°. The proximal disc is perforated to form a channel for communication with the syringe; this opening alternately becomes continuous with either of two similar openings in the peripheral disc, for the inlet and outlet respectively.

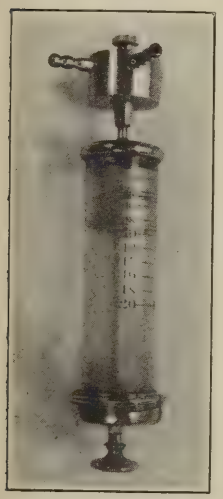

Fig. 1.—Transfusion apparatus attached to twenty c.c. record syringe.

EXPLANATION

Fig. 2A is an ordinary twenty c. c. record syringe, the tip of which fits into the proximal disc of the instrument. This connection may be locked by means of a bayonet catch. Each of the two discs is made of brass, heavily nickeled, and measures one inch in diameter by five sixteenth of an inch in thickness. On its proximal surface the proximal disc B is continued into a metal tube a, for the reception of the tip of the syringe; on its distal surface it is continued into a shaft, b, for insertion into the distal disc, thus allowing rotation of the discs one upon the other. The portion of the shaft which projects beyond the distal disc is threaded for the reception of the nut, D. Midway between the centre and the circumference the distal surface of the proximal disc is perforated by an opening for communication with the syringe. A small pin on the circumferential surface of this disc provides for the correct angle of rotation, 90°, limiting further movement as it strikes against the projecting arms of the stop regulator h; a marking, c, on this surface shows whether the syringe is connected with the outlet or the inlet.

The distal disc is perforated in the centre for the reception of the shaft of the other disc. Midway between the centre and the circumference, the proximal surface contains two openings, d and e, similar to the single foramen in the other disc; they are separated by an angle of 90° and become continuous

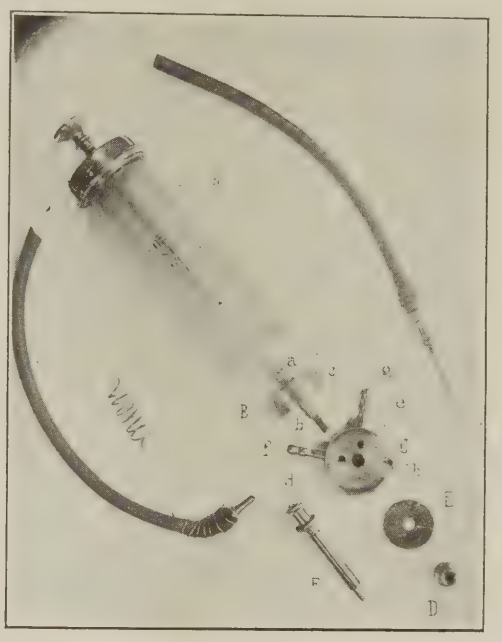

Fig. 2.—A, twenty c.c. record syringes. B, proximal disc; a, metal tube; b, shaft threaded at the extremity; c, marking showing whether communication is with inlet or outlet. C, distal disc; d and e, openings communicating with inlet and outlet tubes respectively; f and g, each of which alternately comes into apposition with the single opening in the proximal disc, as the discs are rotated; h, stop regulator with two projecting arms. D, nut. E, steel spring washer. F, needle for use in infants.

with the metal outlet and inlet tubes, f and g, respectively. A stop regulator, h, with two projecting arms to limit the range of motion to 90°, is screwed onto the circumferential surface of this disc. Between the nut and the distal disc there is interposed a steel spring washer, E.

A piece of rubber tubing with an adapter is attached to the inlet and the outlet respectively. A wrapping of wire at the point of junction with the adapter serves the useful purpose of keeping the end of the tube bent in any position desired. The type of needle illustrated in Fig. 2F has been found convenient for use in infants. I prefer to use needles without the flange, as the weight of the latter is likely to pull the needle out of the vein during the procedure.

The machine, with the inlet and outlet projecting upward, may be held in a slotted holder, which is clamped onto the table. At the start of the operation the syringe contains normal saline solution, which is slowly injected into the vein of the recipient. In the meantime the vein of the donor has been entered. All that is necessary to transfer the communication with the syringe from the donor to the recipient, or vice versa, is to rotate the discs one upon the other.

This apparatus has been successfully employed in 220 transfusions and, for ease of manipulation, has proved superior to any other instrument which the writer has used.

I am indebted to Mr. F. J. Billings for valuable help in the mechanical perfection of this instrument.

616 Carleton Avenue.

*From the United Israel Zion Hospital, Brooklyn.

Wax Models in Teaching Surgery.—F. P. Johnson (*Surgery, Gynecology and Obstetrics,* May, 1924) describes the preparation of wax models as follows: The portion of the surface of the body to be modelled is shaved and coated with a thin film of mineral oil. A thick layer of dental plaster of Paris, properly mixed with water, is then carefully spread over the part. The plaster is allowed to harden and the mold, a negative, is lifted off. After the mold has been allowed to dry at room temperature for two or three days, it is then soaked in cold water until it is thoroughly saturated. Any excess water is sponged from the surface with absorbent cotton and the mold is immediately filled with melted wax. He gives photographs of the different stages of an operation in which this method was employed and concludes: The teaching value of the models herein described has already been demonstrated. They lend themselves equally well to individual or group teaching. They give to the student a better idea of the operation than he could obtain in the operating room for at his leisure he can study all details without missing a single step. Not only is modelling of value in surgery from the viewpoint of showing operations, but the method can be used for other purposes as well. Tumors, ulcers and malformations, if they present themselves externally, are simple to reproduce in wax. The method is excellent for recording the results in plastic surgery, for impressions can be taken before and after the several stages of operations of this kind. It was in this connection that the author became interested in modelling. A number of cases of hypospadias and other malformations of the external genitalia were modelled before and after operation and thus accurate records of the results obtained are made available.

Repeated Blood Transfusions in Progressive Pernicious Anemia.—Emile-Weil, Isch-Wall, Pollet and Lamy (*Bulletins et mémoires de la Société. médicale des hôpitaux de Paris,* January 29, 1925) report twelve cases of grave cryptogenetic pernicious anemia treated by repeated transfusions of 300 c. c. of blood, at first weekly, then fortnightly, and finally monthly. The total number of transfusions ranged from two to twenty-eight. Repetition of the procedure was based on blood examinations, another transfusion being carried out when the red cells and hemoglobin failed to rise any further or sagged. Transfusion seems capable of transforming a hypoplastic anemia to one of the plastic type, at least for a varying period, without any attendant modification of the prognosis, a sharp plastic reaction being sometimes only temporary. The prognosis must depend on the clinical course rather than on any single plastic reaction, however pronounced. In two out of the twelve cases the red cells and hemoglobin returned to normal after three and five transfusions, respectively, and were still normal two and three years later, in spite of an active, fatiguing mode of life. Seven patients were afforded a remission more pronounced and lasting than any other treatment would have given. In four other cases improvement was maintained only for a few weeks, but in these the condition appeared to have been one of cancerous disease of the digestive tract with pernicious anemia, though no autopsy was allowed. The efficacy of the transfusion treatment is shown in that in several instances it proved active in hemolytic relapses, against which no useful measure had previously been found. To obtain more perfect results it would be necessary to know how to overcome the digestive disturbances which are probably responsible for the hemolysis. At all events, transfusion betters the course of pernicious anemia as much as does digitalis that of heart affections. Its efficacy varies, as does that of digitalis, according to the reactive power of the structure concerned, in this case the hematopoietic organs.

Clinical Hemoglobin Estimation.—Richard A. Kern (*Medical Clinics of North America,* November, 1924) finds that the Sahli type of hemoglobinometer is best adapted for routine hemoglobin estimations, because it is simple, easy to use, inexpensive, accurate to five per cent., and serviceable both in daylight and artificial light, while its standard is reasonably durable, can readily be checked as to its accuracy, and can be made satisfactorily in the average hospital laboratory. Hemoglobin estimation by this method should be a part of all routine clinical blood examinations. The practitioner should consider the method as one of the most valuable of clinical procedures at his command. Hemoglobinometers should be graduated in absolute values of grams of hemoglobin per 100 c.c. of blood as well as in per cent. of an assumed normal: 15.6 grams of hemoglobin per 100 c.c. of blood with a count of 5,000,000 erythrocytes (20.9 volumes per cent. oxygen capacity) is endorsed as a figure to represent "100 per cent. normal" for practical hemoglobinometry.

The Van Slyke oxygen capacity method for the estimation should be used in every clinic because it combines great accuracy with ready availability and the simplest technic of the really accurate hemoglobin methods. It should find its chief application in the calibration and preparation of proper standards for clinical colorimeters. An occasional oxygen determination in cases of severe anemia or polycythemia will be valuable both in diagnosis and as a check on routine hemoglobin estimations.

The Paul Test in the Diagnosis of Smallpox.—Charles E. Simon and Joseph M. Scott (*Journal of Laboratory and Clinical Medicine,* April, 1925) present this communication to emphasize a conclusion that they published a year ago, namely, that, histologically controlled, the Paul method in the diagnosis of smallpox is reliable and deserves general application in all doubtful cases. The technic of the method is described. In forty-four of the forty-five cases of bona fide smallpox the macroscopic picture of the inoculated rabbit cornea in the sublimate alcohol bath was in itself sufficient to reach a diagnosis. In the one doubtful case, as in the thirty-nine others in which sections were examined, the histologic picture was a clearcut positive one for smallpox. In none of the cases of varicella or the other skin diseases examined was a reaction noted that even remotely suggested a positive one. The smallpox virus was found in one instance to retain its activity in the dried drop preparation, at icebox temperature, for 387 days. Before release from quarantine, a careful rhinoscopic examination should be made in all smallpox cases, and followed, if considered necessary, by the application of the Paul test to the nasopharyngeal secretions.

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Tuberculosis of the Hip in Children

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Tuberculosis of the hip may be defined as a tuberculous infection of one or more of the structures composing or immediately contiguous to the hip joint.

ETIOLOGY

This condition may occur at any age, but about eighty per cent. of all cases are in children, and this paper is restricted to a consideration of these cases.

Sex has practically no bearing, as the characteristics, environment and activities of the two sexes during childhood are so similar. Climate is a distinct factor, because it may be generally stated that any condition as, for example, inclement weather, which tends to restrict out of door activities and to favor the assembling of persons in places which are frequently overheated and poorly ventilated, diminishes exercise, impairs the appetite, and interferes with elimination, thus lowering the general resistance; and any such condition also favors the development and spread of respiratory infections. This disease is always the result of infection and is always secondary, although the portal of entry may have healed completely, long before the manifestations in the hip appear. The gastrointestinal and the respiratory tracts are the two avenues by which the tubercle bacillus gains entrance in the vast majority of cases, and these indicate the two main sources of infection—food and air borne particles.

The effect of trauma is rather difficult to determine, for a history of frequent falls can be obtained from practically all children. The fact, however, that by far the greatest amount of joint tuberculosis occurs in the spine and lower extremities would seem to indicate that weight bearing and the effect of repeated jarring and bruising may be determining factors in the location of these secondary foci of infection.

ANATOMY

The normal hip is a ball and socket joint, beautifully and effectively contrived to withstand shocks, support the weight of the body in a great variety of positions, and still permit of a wide range of motion. The axis of the neck is at an angle of about 130° with that of the shaft, thus obtaining all of the mechanical advantages of an angular lever, but the mechanical weakness of angles is avoided by a wonderfully combined system of curves. The neck forms an even curve with the shaft, the head, neck and shaft are all roughly cylindrical, and the arrangement of the trabeculæ in the head and neck is in a series of long curves approximately perpendicular to the surfaces at the points of greatest pressure and passing inward and downward in such a manner as to prevent absolute rigidity and still provide great elasticity and dispersion of the forces of concussion and weight bearing. The fossa of the acetabulum has its greatest strength in the upper posterior portion in the direction of the greatest pressure, the lower portion being thin. The surrounding muscles pass from various points of origin on the pelvis to the greater and lesser trochanters, all being inserted well beyond the head.

PATHOLOGY

In nearly seventy-five per cent. of cases the head is involved first. The infection is usually hematogenous, the process gaining foothold near the epiphyseal line where the primitive function of cell reproduction is active and the secondary function of resistance is low. In a much smaller percentage of cases the acetabulum is first to suffer. As the involvement of the head progresses, trabeculæ are destroyed, undermining the supporting structure and interfering with the growth of the bone. The force of gravity and the constant tension of the muscles crush the weakened trabeculæ into the focus and the destruction increases.

These pathological activities about the joint have a reflex effect upon the nutrition of the leg and a more marked atrophy takes place than can be explained by interrupted function. As the process approaches the joint surfaces, nerves are involved, motion and slight jars are painful and muscular spasm develops in an unconscious attempt to limit motion. This effort, however, causes increased and continuous pressure upon the weakened bony structures resulting in more rapid destruction and the

formation of a vicious circle. If suppuration takes place the abscess may perforate the periarticular structures and appear beneath the skin, or it may invade the joint cavity, perhaps appearing later externally or even eroding the thin floor of the acetabulum and penetrating the pelvis.

Where the acetabulum is involved early the constant effect of weight bearing and the crowding of the head against the upper rim by the tension of the muscles causes erosion of the rim and the head gradually migrates upward until a complete dislocation may occur. Sooner or later pain and muscle spasm cause a fixation of the joint and ankylosis takes place—generally in a position of adduction and flexion. This is the usual termination in untreated cases and it occurs when resistance has developed and when motion of the opposed, irritated, bony surfaces has ceased for a sufficient period to permit osteogenesis.

SYMPTOMS AND SIGNS

Bearing in mind these points of pathology, the more usual symptoms are easily remembered. Briefly, they are limp, muscle spasm, pain, attitude, atrophy and swelling.

The limp is usually the first thing to attract attention; frequently it is intermittent and without pain, often like a slight stiffness just after rising in the morning, soon wearing off and frequently not noticed again during the day.

Muscle spasm is first seen in a tendency to guard the joint against jars, by walking on the toes and by avoiding running; also, there is a tendency to avoid pressure by standing on the other foot with the affected leg everted and slightly abducted. There may at first be apparent lengthening of the affected leg due to this abduction and the consequent tilting of the pelvis toward that side. As the disease progresses the muscle spasm increases, finally becoming so marked and constant that motion of the joint is greatly restricted. This spasm is one of the most important signs of the disease, not only on account of its diagnostic importance, but also as an index of the efficiency of treatment, and its reflex character increases its value.

Pain is not usually a marked symptom early in the course, although occasionally severe. It is most commonly referred to the lower part of the thigh on the inner side just above the knee. This location depends upon the anastomoses of the sciatic, obturator and anterior crural nerves, and it is so constant and characteristic that unilateral pain in the knee of a child should always be considered serious until proved otherwise. Pain is also the cause of the characteristic "night cries" which are often noted. They usually occur in the early part of the night just after the child has gone to sleep. This "night cry" is a sharp cry of sudden, severe pain although frequently the child does not actually waken, and it is due to the abnormal irritability of the muscles. The muscles relax slightly as unconsciousness deepens until a slight motion or fibrillary twitch throws them suddenly into a state of strong contraction driving the head of the bone forcibly into the acetabulum. One can easily imagine the resulting pain and older persons who have experienced it compare it to a heavy blow upon the hip. The pain leaves almost immediately, due to the fixation of the hip by the spasmodic contraction, and this explains the fact that the child frequently does not waken completely.

The attitude of the affected leg is quite noticeable. In the early acute stage it is held in a gradually increasing degree of flexion, abduction, and external rotation. After the continuance of muscle spasm for some time the greater leverage of the adductors finally overcomes the resistance of the opposing muscles and results in a position of flexion and adduction. The extreme to which this contraction may go is illustrated by the case of a little patient with double tuberculous hip disease who had been treated by an osteopath for rheumatism until the torture of the frequent manipulations compelled the parents to drop the treatment, and when seen shortly afterward both thighs were held by muscle spasm rigidly crossed over the abdomen.

Atrophy of the affected leg is early and marked, usually being distinctly noticeable before the period of disability begins.

Swelling can be detected early by deep palpation over the head of the femur from the front and is due to the inflammatory reaction in the periarticular tissues. It is also frequently perceptible from the back, often being of sufficient amount to cause a change in the gluteal folds which can be noted on inspection. When the thickening is on the lower, inner side of the joint the cleft of the buttocks or vulva can be seen to be displaced slightly to the opposite side.

DIAGNOSIS

The early case of tuberculous hip is usually brought to the doctor on account of a limp. The parent states that several times during the past two or three months the child has limped for three or four days without any apparent cause. Sometimes the limp has worn off during the morning, sometimes has been noticed to reappear once or twice during the day; there may have been no pain at all or there may have been a slight lameness of the knee at times. The history may be otherwise entirely negative, or inquiry may show a possible tonsillar or glandular infection some time previously. Pulse and temperature may be normal, especially if taken in the interval between periods of limping, and the general appearance may be that of a vigorous, healthy, well nourished child. If the child be stripped and laid upon the table there will nearly always be found a slight thickening over the head of the femur as compared to the normal side, and when the thigh is flexed at a right angle to the plane of the table and then laid out to the side the motion will be stopped distinctly sooner on the affected side than on the normal, due to the contraction of the adductor muscles. Also gentle rotation with the thigh raised to a right angle will be found to be more or less limited. If it is desired to test extension the child is turned on the face and each leg raised in turn and it will be found that the affected one draws the pelvis up much sooner than the normal one. In an early case this is frequently all that can be found on physical

examination. At this stage also a slight atrophy may be found upon careful measurement. Jarring the joint by striking the heel or trochanter is rarely necessary for diagnosis and should not be routine, as the avoidance of unnecessary pain is fundamental in the examination of children.

The x ray in these early cases is often absolutely normal, the process not having progressed far enough to show increased radiability of the bone, and the occasionally seen periarticular cloudiness is so slight as to be of no diagnostic value. The blood count is usually well within normal limits; a Von Pirquet test in children under four years of age is of value, and a negative test in older children is a good indication that the condition is nontuberculous.

In more advanced cases the history of limp and of pain in the knee is more definite, to which is often added the history of "night cries," general malaise, loss of appetite, occasional fever, loss of color, and stationary or falling weight. In such cases the characteristic attitudes of standing, walking or lying may be seen; the pulse rate is usually increased, and there is an afternoon elevation of temperature. Physical examination will show distinct periarticular thickening and occasionally pain on pressure over the joint, atrophy, marked limitation of motion with adductor spasm, and the changed gluteal fold already mentioned. At this stage also the x ray is usually of diagnostic value.

TREATMENT

The object of treatment is twofold; first, the development of a local and general resistance sufficient to prevent the extension of and finally heal the local process, and second, to restore as nearly as possible the normal function of the joint. Anything which improves the general resistance will, of course, improve the local, and so all the general measures which apply to tuberculosis in any location are indicated—improved nutrition, fresh air, removal of local sources of infection, heliotherapy, etc. Theoretically the use of tuberculin would seem indicated when the specific resistance does not improve under general measures and the tuberculous infection is not overwhelming, but in a case in which the local condition is not advancing and the general resistance is good it seems logical to assume that the body is well supplied with specific antibodies and that the stimulation of further antibody production is not indicated; also, until we are more familiar with the phenomenon of anaphylaxis we would do well to refrain from the introduction of an antigen which may interact with the antibodies already present and produce the undesirable effect of hypersensitization.

The complication of abscess formation is to be treated as occasion demands, the general principle being to avoid secondary infection whenever possible, and this means incision only when general and local measures, such as feeding, hygiene, local heat, and aspiration are unavailing. When sinus formation has occurred the course is usually protracted and here again the improvement of the general condition is one of the greatest factors in a successful result; locally, unobstructed drainage is the first essential and this may be supplemented by local applications or injections of various kinds, by hyperemia induced either by the method of Bier, by hypertonic solutions, by heliotherapy or other forms of radiation, or by dry heat; also, perhaps, the use of vaccines in selected cases to combat secondary infection.

The operative procedure of extensive removal of diseased bone, often including large portions of the head or ilium, should be reserved for the most advanced cases and used only when a thorough trial of other methods has failed to produce results, for if the tuberculous process can be overcome by improving general and local resistance, bone regeneration may occur, replacing to a variable extent the former infected area. If, however, portions of the joint have been removed, there is no framework remaining for advancing osteoblasts to follow; there is always destruction of periosteum and synovial cartilage; and there is nearly always apposition of raw bony surfaces which results in ankylosis.

The second object of treatment, the prevention of deformity and restoration of function, requires early and persistent attention. From a review of the pathology we see that the first essential is the prevention of the crushing of the diseased tissues by weight bearing and by muscle spasm. This requires rest in bed with sufficient traction to overcome the pull of the muscles. It also requires that the traction be in the direction in which the muscle spasm is least active, that is, in the line of deformity, whether this be toward the foot of the bed or over the shoulder, as otherwise the tense muscles act as a fulcrum forcing the short end of the lever against the acetabulum. Under this treatment the spasm decreases rapidly, pain and "night cries" cease, and the general condition improves. When spasm is absent the direction of the traction is changed slightly toward the normal, and this is continued at intervals of several days until the leg is straight beside the other, always waiting between changes of direction until both adductor and flexor spasm have completely disappeared, whether this be days or weeks.

After a period of one or two months in the normal position to permit of continued healing, the patient is ready for a splint and the one which seems to be most satisfactory in every way is the Bradford traction abduction splint. This consists of a ring which rests against the perineum, the ischial tuberosity and the outside of the hip above the trochanter, with a short projection which holds the leg in slight abduction. To this ring are attached two rods which terminate well below the foot and carry a small racheted bar to which may be attached the straps of an ordinary Buck's extension which may be adjusted, by turning the bar, to any desired degree of traction. The object of such a splint is to enable the child to become ambulatory at the earliest possible time and thus employ the powerful influence of general muscular activity in the development of health and resistance. Such a splint maintains traction relieving the diseased surfaces of pressure; immobilization, although not absolute, is sufficient for healing; ankylosis is prevented in most cases, and the resulting function is usually excellent.

The value of this ambulatory treatment is so great that the Massachusetts Hospital School, which has a series of several hundred cases, has made it routine, condemning and discarding completely the former

method of treatment by plaster without extension. The duration of the bed treatment is determined by the extent of the process at the beginning of treatment, as it must be continued until the local disease is quiescent, the spasm is absent, and the leg is in as nearly normal a position as possible. This is seldom less than three months and may be as long as eighteen months. The duration of ambulatory treatment is usually from two to three years, the splint being removed at night during the latter five or six months of this time. The utmost care in changing the extension is necessary during the earlier part of the treatment, for traction must be maintained constantly lest the head be allowed to come against the acetabulum with sufficient force to cause reflex muscle spasm and thus delay healing or even destroy the delicate, newly formed cells.

This last point shows clearly the serious fallacy of the plaster cast treatment, for no cast ever applied can fit the leg so closely as to maintain traction on the hip joint. The interior diameter of a cast increases as the plaster dries, the tissues atrophy both from the disease and from disuse, and muscle spasm continues to pound the diseased acetabulum with the diseased head. A more effective method for the production of ankylosis could scarcely be devised. In addition, the cast is at best heavy and cumbersome, interferes with activity, and often the only modification which it makes in the end result is that ankylosis may take place with less deformity than when the case is left to go untreated.

There are undoubtedly cases in which fair results have been obtained with the cast method of treatment, but the course of these cases is always longer than is necessary and it is doubtful whether the end results are ever as good as possible. A review of the cases treated at the Children's Orthopedic Hospital in Seattle under both the previous and present methods bears out the experience of the Massachusetts Hospital School. Under the plaster treatment the records usually show frequent periods of extension in bed following acute exacerbations which have occurred after wearing plaster for varying periods of time, and usually a final condition of ankylosis in a more or less abnormal position; while under the present treatment the period of disability is much less, exacerbations have not occurred, and the present function in most cases is excellent.

PROGNOSIS

The prognosis of tuberculous disease of the hip when efficient treatment is begun early is excellent. Deformity is always limited and often entirely prevented, the period of disability is not great, and is modified by the ambulatory splint so that a child is able to attend school and continue many of the activities of normal life. In cases where treatment is begun later in the disease all variations of final result are seen, from the limitation of motion with slight shortening, up to complete ankylosis at a right angle with total destruction of the hip joint and inability to walk. In cases with marked deformity much can be done by osteotomy, physiotherapy and apparatus to make the condition more endurable, and in some instances such patients can be so improved as to become useful members of society. Cases with abscesses and sinuses always have a worse prognosis than others, for there is, frequently, absorption with resulting nephritis or amyloid degenerations and often secondary tuberculous processes in the lungs or brain, tuberculous meningitis being a sequela more frequently observed in tuberculosis of the hip than in that of any other joints.

830 Medical and Dental Building.

Pyloric Obstruction in Infants with a Nervous Heredity

Report of Ten Cases

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Very little is known about the etiology of pyloric stenosis in infants. Some ascribe the condition to hyperadrenalism, but this seems to have a merely conjectural basis rather than a positive proved one. It is, however, suggestive.

In the ten cases reported in this communication all the children were born of parents of whom one was decidedly neurotic. I believe that this neuropathic taint in one parent, inherited by the sick child, is manifested in early infancy by pylorospasm or organic stenosis. Freer in his excellent textbook states that pyloric disease in infants is a neurosis dependent upon a neuropathic ancestry.

Case I.—Baby G, a boy, was born prematurely, as were his sister and brother. His father was a stolid man, of excellent athletic physique, and not at all nervous; his mother was intensely neurotic and so was his sister. From birth it was necessary to nourish him artificially. During the first week he exhibited marked signs of thymus disease, which I failed to recognize as such until five months later. He became deeply cyanotic when his foreskin was stretched and in his bath. During my absence an officious nurse raised his formula so that it contained an inordinate and improper amount of fat. He was taking under this woman's feeding a formula containing seven per cent. fat, six per cent. sugar and one and a half per cent. proteid. Soon after this he began to vomit, retaining little of his food; his food was projected violently. He lost weight rapidly, exhibited active peristalsis in the epigastrium, and a small pyloric tumor was demonstrable in the right upper quadrant of the abdomen. A posterior gastroenterostomy was rapidly performed by Dr. J. B. Deaver (this was ten years ago), from which the child recovered satisfactorily. He gained weight

slowly and when five months of age the thymus began to obstruct his breathing, and catarrhal pneumonia supervened. Breathing became very rapid and the case seemed desperate. Vigorous x ray treatments reduced the dyspnea in a striking manner; he was given many treatments and recovered from the thymic disease.

Case II.—Baby P., a girl, at five weeks exhibited projectile vomiting. Obstruction of the pylorus being suspected she was at once examined by x ray, and an obstruction was easily demonstrated. There was retention of the opaque meal for over six hours, and a small pyloric mass was discovered. After waiting a week on account of the child having a cold, an operation was performed successfully by Dr. Harry Deaver. The child made a slow but satisfactory recovery. This infant's father is a superbly built man, an old college athlete and soldier. He is not nervous, and in every way is vigorous and strong. The mother is essentially neurotic. Once she exhibited such mental depression that she talked of suicide, and at another time was so nervously depressed that a prolonged rest cure was needed in order to restore her nervous tone. The child is now over three years of age and is not nervous.

Case III.—Baby T. S., when six weeks of age, exhibited projectile vomiting; he was partly breast-fed. On examination a pyloric mass could be easily felt and the characteristic peristaltic waves could be elicited on stroking the epigastrium. The child's mother was essentially neurotic, suffered from a neurogenic asthma and exhibited marked mental signs of a neurotic nature. Her mother in turn was even more neurotic than the mother of the child, and suffered from delusions of persecution and presented other evidences of a psychosis. The father was a finely built athlete.

A Rammstedt operation was quickly and skillfully done by Dr. Charles Mitchell, and the boy recovered after a slow convalescence.

Case IV.—B. S., a sister of the patient in Case III, when a week old exhibited some cyanosis and vomited all her food. A pylorospasm was suspected. Peristaltic waves were elicited in the usual manner in the epigastrium, but no mass could be palpated in the epigastric region. Because of the cyanosis, strychnine 1/1000th grain was given every three hours, together with massive doses of atropine 1/250th grain every three hours for twelve hours. Under this active and heroic treatment the child recovered and never again exhibited obstructive symptoms of the pylorus, and showed no signs of atropine poisoning.

Case V.—Baby L., a girl, at six weeks of age exhibited signs of pyloric obstruction. She vomited forcibly, the ejected food being thrown two and a half feet while the child was in the prone position. No pyloric mass could be felt. Faint epigastric waves were elicited on stroking the epigastrium, and the x rays revealed a five hour retention of food. Some of the opaque meal had passed into the duodenum; much was retained in the stomach at the end of this period. A huge thymus, suspected because of the pyloric condition, was easily demonstrated by the x rays.

The mother of this girl was a stolid woman, not at all nervous. The father, on the other hand, was not only neurotic, but was in an advanced stage of diabetes, requiring while on a maintenance diet eighty-five units of insulin daily to keep his sugar level below 300 mgs. to the 100 c.c. of blood. Once before marriage he had suffered from a mental breakdown lasting a year. Under thick feedings and atropine in doses of 1/500th of a grain with each bottle the child soon stopped vomiting excessively and gained weight satisfactorily. A skimmed milk mixture in addition to the farina mixture were necessary to control the vomiting.

Case VI.—A boy, aged one month, bottle fed, was admitted to the wards of the hospital, with the usual history of vomiting all kinds of food. The mother was a stolid English woman, and the father was neurotic, of an inferior constitutional build, having many stigmata, dilated pupils, and an anxiety neurosis. The boy was feeble, dehydrated, and emaciated, weighing only six pounds. A buttonlike mass was easily located in the epigastric region deep down, near the spine. No peristaltic waves were elicited on stroking the skin of the epigastrium, but upon palpating the pyloric tumor intensely deep waves immediately appeared, dividing the stomach into two balloonlike halves. Repeated palpations by several physicians produced such a spasm of the stomach that the child went into a semicollapse. Thick feedings were at once begun, atropine was given, also bromides, and because of the dehydration two intraperitoneal injections of normal salt solution with five per cent. glucose were administered, 200 c.c. each. No x ray examination was attempted. The diagnosis was patent to all. In two days a speedy and successful Rammstedt operation was done by Dr. Harry Knox. Subsequently another intraperitoneal injection was given because of dehydration. Thick feedings, alternating with a skim milk lactose mixture, were given, and after a period in which he did not gain, the child slowly recovered. When admitted he had a leucocytosis of 15,000 and a continuous fever, possibly the mooted inanition fever.

The following cases were reported to me by Dr. Radcliffe Cheston, who treated all four of them:

Case VII.—Baby X., a boy, shortly after birth exhibited signs of pyloric obstruction with projectile vomiting and small stools. A mass was found. Operation was successfully performed and recovery ensued, atropine and thick feedings having been employed. The mother was very nervous, the father healthy in every way.

Case VIII.—A boy at three months exhibited obstructive signs. Thick feedings were administered and atropine given. After a long siege of many months the child recovered. The mother of this boy was highly neurotic, but the father was not nervous and was healthy. The child was also neurotic, but is improving in this respect.

Case IX.—The patient, a boy, was operated on at five weeks, the diagnosis being confirmed at operation. The mother was not nervous, but the father was neurotic, this nervous condition no doubt having been aggravated by confinement in a German prison during the war.

Case X.—This patient, a boy, was operated upon at eight weeks by Dr. Francis Allen. A hypertrophied pylorus was found and split after the manner of Rammstedt, and the child recovered. The father of the boy was healthy in every way; the mother, as in most of the other cases reported, was highly neurotic.

Dr. K. reported to me the history of his own son, who was operated on by Dr. Harry Deaver, the diagnosis of pyloric obstruction having been made early by the father. The child recovered. The parents of this child were not nervous. The father was very intelligent and athletic in build.

In this series of ten cases, all of the children were of neurotic parents—three with neurotic fathers and seven with neurotic mothers. I have observed in this small group of cases that the combination of an athletic father and a neurotic mother was present in at least four families with a history of pyloric obstruction (five children). Athleticism is a form of hyperadrenalism, according to some writers.

There seems to have been a neurosis in ten instances at least, expressing an hereditary nervous imbalance in the children. This seems significant.

5211 Wayne Avenue.

Constipation in Infancy and Childhood*

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Constipation is very common in infants during the breast or bottle feeding period; indeed, it is so frequent that one would be led to suppose that some special cause peculiar to this age exists. It might be suggested that this cause lies in the fact that the diet at this time, being liquid, leaves little solid residue to stimulate the intestines to active peristalsis. However, this can hardly explain it entirely, for in the bottle baby fed on cow's milk, which has a large tough curd, one would suppose constipation to be less frequent than where the infant receives human milk which has a fine flaky curd. As a matter of fact the reverse is the case.

ETIOLOGY OF CONSTIPATION

The feeble musculature of the bowel has been held responsible for the frequency of this trouble in infancy, a view which gains support from the fact that feeble and premature infants are more prone to constipation than normal ones. Consequently, this lack of muscular strength in the bowel must be reckoned with as an important factor, but other causes must be considered as well, as sometimes the feeblest infants have regular bowel movements while a strong baby similarly fed may suffer from constipation.

The possibility that anatomical peculiarities may account for this tendency to constipation is suggested by observations on the relative lengths of the large intestines and the body, as they are compared at different ages.

The function of the large intestines is chiefly to absorb the liquid part of the food. Nature has provided for infants a food capable of rapid assimilation, and to secure abundant absorption special provision is made of a relatively large colon. At birth the large intestine is relatively much longer than the body. At the end of the second year it is several inches longer than the body. After the second year the difference becomes less marked, and as the child reaches four or five years the relationship is reversed. The large intestine becomes shorter than the body and in later years this relative shortness is even more marked.

From these observations it might be expected, owing to its relatively excessive length, some folding and kinking of this part of the bowels must be present in infancy. These folds and kinks will be more or less straightened out in later childhood by the enlargement of the abdominal cavity.

There can be little doubt that the sharp turns upon itself which the colon of an infant often makes in the sigmoid region must offer considerable obstruction to the course of the feces. The presence of feces must still further accentuate the kinking. In addition there is usually associated with these obstacles excessive feebleness of the muscle fibres. It is therefore easy to understand why an infant is prone to chronic constipation. These observations seem to explain the clinical fact that the constipation tends to right itself as the child grows older. The kinks and folds are diminished, as the colon is straightened out by the rapid growth in the length of the abdomen, and thus it may be truly said that the child grows out of the constipation habit.

I have dwelt on these causes of constipation in infancy somewhat fully because, even though they afford little guidance in treatment, they at any rate provide a reasonable hypothesis which explains the difficulty so often met in overcoming the condition at this age; and they give good ground for assuring the parents that there is every probability that the trouble will disappear as the child grows older.

Both in infancy and early childhood and even to some extent in older children there is a negative factor which may play an important part in the production of chronic constipation—I mean the absence of voluntary effort to cultivate regularity. The child, conscious only of a weak desire to defecate and of a much stronger desire to play, neglects the former in favor of the latter; and what is a wilful neglect at the time very soon becomes real inability.

It is customary to attribute constipation to fissure

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of the anus, polyps and to other local abnormalities. Undoubtedly these conditions may be operative as causative factors, especially on account of the pain induced by the passage of the fecal mass. This causes repression of the desire to go to stool. However, I believe that these conditions occur rather more often as the result of constipation than as the cause of it, and any successful treatment, therefore, must be directed toward the cure, not only of the fissure, or other condition, but, more important, toward the cure of the constipation.

Errors of diet and insufficient food, where there is very little residue or where food of an inappropriate composition as in the artificially fed infant is taken, must be considered and corrected.

RESULTS OF CONSTIPATION

Foremost among the evils of constipation in infancy I shall put failure to gain weight, or slow progress in nutrition. I have often seen babies placed on all sorts and varieties of food because of stationary or loss in weight, without improvement, when the real cause was constipation. Correction of the latter without change of food I have often seen followed by a gain. Another result of constipation is vomiting. I do not mean severe vomiting, but where the infant brings up half an ounce or more after each feeding. An infant who is said to be always screaming is very often suffering from constipation. The bowel makes vigorous but ineffectual efforts, and the result is colicky pain.

Convulsions, prolapse of the rectum, hernia, bloody stools, piles, which I have seen in an infant five and one half months old, anemia, various skin lesions, eczema, and toxic rashes, may be traced directly to constipation. In older children the anemia and failure to gain are common consequences. The child is pale, has a pasty complexion, is languid and tires easily on exertion, and suffers from headaches. The appetite is poor, breath is offensive, dark circles may appear under the eyes, and the eyelids are slightly puffed. The skin is dry and sometimes scaly, sleep is poor, nightmare is not infrequent, and restlessness is the rule.

TREATMENT

In many cases constipation in childhood might be prevented by the encouragement of regular habits. I wish to lay particular stress upon the mischief done to older children by lack of care in this matter. The child who goes to school is allowed to take his breakfast at an hour which leaves him barely time to snatch a hasty meal; much less to attend to the evacuation of the bowels. By insisting that he have his meal a half hour earlier, good digestion and daily evacuation may both be insured.

DIETETIC MEASURES

I wish to state that in my experience the dietetic measures, which may be of value and upon which many textbooks lay so much stress, are apt to be most unsatisfactory in many cases. The digestion at this age is easily upset, and the foods which exercise a laxative action upon the bowel are those which are most likely to disturb digestion.

In the case of the breastfed infant a change of food is never advisable unless the quality and quantity of the breast milk is insufficient. It is true that we may try to increase the protein or the carbohydrates in the mother's diet, but as a rule if any dietetic measures are to be tried it must be done by direct addition to the breast feeding. I see no objection to giving the infant once or twice a day some starchy food in the form of a well cooked cereal, such as farina or oatmeal.

A highly concentrated sugar mixture may answer the purpose, or a mixture of diluted milk with Benger's or Mellin's food, once or twice a day, with the breast feeding, or a bottle of acidulated milk. Water is also an essential, though many breast babies dislike it. In the artificially fed infant very often by a simple change in the diet it is possible to soften the stool and to produce free evacuation. In cases of fat constipation, reducing or removing all or nearly all the fat and increasing the carbohydrate may bring about a favorable result. Small doses of codliver oil are often helpful. Milk prepared with Mellin's food is often laxative. Of the starchy foods oatmeal is certainly the most laxative, and an oatmeal gruel or farina well cooked is often very efficacious.

In older infants a minimum amount of milk and eggs and a maximum of the coarser vegetables, such as spinach, beets, carrots, celery, lettuce and onions, will give results. I do not hesitate to give them to infants at a very early age. Apple baked or raw, figs, prunes and small pieces of bananas should be tried, and in some cases laxatives must be used. These I will discuss later.

In children past infancy dieting for constipation is one of the commonest causes of indigestion. The average mother has a profound conviction that it is bad to give drugs and will depend upon food which is said to be Nature's ideal, but with no result. Plenty of fruit, and more fruit, and various forms of bread are fed to children without benefit, only disturbing their digestion. I favor, therefore, the proper use of drugs in appropriate doses and at proper times.

Very often the doctor will prescribe a drug with directions "when required." This is a sure way to cause chronic constipation. Whatever drug is used, it should be given regularly, once, twice, or three times a day; in such doses as will keep the bowels open without purging. Its administration should be continued for weeks and months until the habit of regularity in the action of the bowel has become a fixed one. The time for omitting the drug is determined by attempting to drop one of the daily doses, or to reduce the dose after several weeks of treatment. If this is found not to alter the regularity of the bowel the other doses can gradually be diminished or omitted.

The choice of drugs will differ according to the age. The free administration of castor oil is harmful, increasing or even inducing constipation. The following drugs have served me well:

Hydrargri cum creta, one half grain three times a day; pulvis rhei comp., eleven grains three times a day; syrup of senna, thirty minims three times a day; liquid petrolatum, thirty minims three times a day; infusion of senna; powdered rhubarb; cascara with malt; and pituitrin.

Whichever of these various drugs is used, it is to be impressed upon the parents that regularity of the bowel must be procured and maintained, and the object of treatment is to establish a regular habit. It may require several weeks or months, but it usually can be successfully carried out.

A few words about the use of enemata and suppositories may be in order. They are less satisfactory for chronic constipation than treatment by mouth. The action of the bowel is made to depend on a mechanical stimulation, and when this has to be repeated for a long period the bowel will not respond to the less normal stimulant. Another objection is dilatation of the rectum and perhaps of the sigmoid. If an enema is to be used, and in some cases they are necessary, a small amount of fluid should be used, and olive oil is much to be preferred. Half an ounce of olive oil with three ounces of soapy water is sufficient.

Much can be said about mechanical means, such as massage and exercise. Biweekly treatments with the mercury quartz lamp for a few weeks will sometimes cure obstinate chronic constipation.

2009 Pine Street.

Renal, Ureteral, and Urethral Calculi

Report of a Case in a Child Eight Years of Age

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In reviewing the literature of this country one is struck with the lack of case reports on this subject. Dun (1), Charvin (2), Rafin (3), and others think that children seldom suffer from stone in the kidney. Dun cites Henry Morris who collected two hundred cases of operation for renal calculi between 1883 and 1893 and in only one case was the patient under ten years. Bokay (4), Civiale (5), and others think that lithiasis is common in children. Young (6) also disagrees with the clinicians who hold that renal calculi are rare in early life and believes that they are evidently at fault. Thompson (7), Canton Hospital, China, found during a period of nine years, 1911 to 1919, 585 cases of calculus of the urinary organs; thirty-eight per cent. of this series were in children under fifteen years of age. Thomas and Tanner (8) in this country collected 203 reports of infants and children with urinary lithiasis. Collins (9), who carefully studied the foreign literature and gave us the most valuable contribution on this subject, asserts that there is a paucity of case reports of renal stone in infants discovered and treated surgically during life.

The case I wish to report is one of renal, ureteral, and urethral calculi in a boy eight years of age. I was called to see the patient on February 7, 1925, at 1 a. m., in consultation with his family physician, who stated that the child had blood and pus in the urine which dribbled at times and that for the past twelve hours the child had suffered excruciating pain on attempting to void. He therefore felt that the child had a stone in the bladder. A cursory examination at the patient's home revealed that we were dealing with a deaf mute who was manifestly in extreme agony. After the hypodermic administration of morphine gr. 1/6 and atropine gr. 1/150 I proceeded with the examination and found that the bladder extended two fingers' breadth above the umbilicus, and a calculus was definitely palpable at the root of the penis. An attempt was made to pass a catheter which was arrested at this point. The child was then taken to the West Baltimore General Hospital, where an external urethrotomy was at once performed and a calculus 2 cm. by 1 cm. weighing 25 gm. was removed and about 1200 c.c. urine escaped. A retention catheter was then inserted and the wound closed with a few catgut sutures. On the fourth day the wound was practically healed and the catheter removed. An x ray plate was taken and showed a calculus in the bladder and a great number of large calculi in the left kidney.

A combined phthalein intramuscularly gave twenty-six per cent. for two hours and five minutes. A cystoscopic examination was done and to our surprise the calculus which was supposed to be in the bladder was found in the intramural portion of the right ureter. A number 6 catheter was introduced after considerable difficulty and a phthalein from the right kidney showed twenty-six per cent., proving that the left kidney was functionless. The blood chemistry was within normal limits and the Wassermann was negative. I then decided to watch the child for several weeks, during which time the x ray examinations were repeated several times and the results confirmed. On February 28, 1925, a suprapubic cystotomy was done and the calculus removed. The wound was closed, and a small drain inserted to the bladder and a retention catheter introduced. The suprapubic wound healed rapidly, but I again decided to wait and give the child an opportunity to build up a bit until March 27, 1925, when a nephrectomy was successfully performed. Graded operative interference was definitely indicated in this case and in no small measure was responsible for its successful completion. Rankin's (10) article on graded abdominal operations should be closely followed in genitourinary surgery as well.

The family history was unimportant; there was no history of stone in the family. His personal history is rather significant. The child, at birth, weighed ten pounds, was bottlefed after the third month. He had suffered from supposed intestinal

colic the greater part of the first year. He had none of the infectious diseases of childhood, but had convulsions and fits at four years of age for which he was admitted to a hospital. He stayed eight days at the hospital and his condition was diagnosed hydrocephalic imbecile. On examining

Fig. 1.

Fig. 2.

Fig. 1.—Kidney bisected showing large triangular calculus measuring 3.75 c.m. x 2.25 c.m. x 2.25 c.m., almost completely filling the pelvis.

Fig. 2.—Each half of the kidney again bisected showing a great number of calculi within the calyces. Chemical examination by C. E. White—amorphous phosphates covered by triple phosphates.

the chart one noticed that the child ran a septic temperature ranging from 99° to 101°, and that the uranalysis revealed a heavy albumin ring, alkaline reaction, a moderate amount of red blood cells and pus cells. Apparently no effort was made to account for these urinary findings. A parallel case is cited by Aleksinski (11); his patient had nervous fits at two years which were never diagnosed; however, his patient had no blood nor pus in the urine.

HISTORICAL NOTE

The development of renal surgery, particularly that of the stone kidney, is very interesting. From the days of Hippocrates, who records nephrolithiasis with great accuracy, the surgery of the stone kidney made very slow progress (12). The first operations ever ventured on the kidney were incisions for the drainage of pus, evidently for perinephritic abscess. Along about the eleventh century operations were performed on the bladder for the removal of urinary calculi. Even Guy de Chauliac (13), the most distinguished authority on surgery during the fourteenth and fifteenth centuries, held the view that renal calculi were formed from sand in the kidney, offers a number of medicines for dissolving them, and if unsuccessful, to remove the calculi only when they have descended into the bladder. For many centuries there was great opposition to the removal of stone from the kidney, because in doing this it was thought that the kidney would be destroyed, and that life was not possible without a kidney. This opinion was held for many centuries in spite of numerous successful animal experiments. In 1881 Czerney performed the first pyelotomy, which was soon followed by a nephrotomy by Dominic de Marchitti. Henry Morris performed several nephrotomies proving that calculi could be removed by incision through the renal parenchyma, and therefore proving that it was possible to save the kidney from the destructive influence of stone without sacrificing the organ. The first intentional nephrectomy is recorded by Simon of Heidelberg, but only after a number of nephrectomies were performed by mistake, mistaking the kidney for an ovarian tumor (14). For many years pyelotomy was the operation, by preference, it then yielded to nephrectomy for a great number of years, but now once more pyelotomy is the operation of choice. Recently, Goldstein and Carson (15) performed extensive experiments on dogs, bisecting the kidney from pole to pole and closed the wound by pressure without suture and proved by numerous pathological specimens that the method entailed no damage to the kidney.

ETIOLOGY

In just what way renal calculi originate is a problem; their constituents are always present in the urine, but the reason they crystallize out in some cases and do not in other cases is still to be solved (16). Possibly there is more than one single factor concerned in stone formation. Williams (17) enumerates the older theories. The theory of overplus salt content by virtue of increased elimination or high concentration of salt in the urine. The theory of organic nucleus may favor aggregation, but not precipitation. He further pretends to prove that lithiasis is secondary to fermentation, the ferments being elaborated by microorganisms and not by the body cells. Shade's (18) work on the origin of renal calculi furnishes an explanation based on scientific facts. Shade calls attention to the fact that if uric acid is deposited on fibrin no amount of water will dissolve it because fibrin belongs to a class of substances termed irreversible colloids. There are present in the normal urine colloids, mucin, and urochrome. These colloids are reversible, i. e., after having passed out of solution they may under changed conditions of reaction be again taken in solution. Irreversible colloids are present in the urine in pathological conditions only. Fibrin is the characteristic representative of the group of irreversible colloids. It appears in the urine as the result of hemorrhage or inflammation (19).

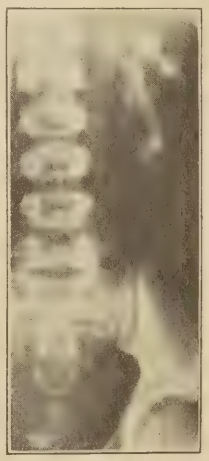

Fig. 3.—Plain x ray plate of the genitourinary tract, showing a number of calculi in the left kidney, and one calculus in the intramural portion of the right ureter.

It is well known that bacteria and toxins are constantly being absorbed into the circulation from the throat and bowel and excreted by the kidneys, without causing gross inflammatory changes, but it is not unlikely that lesser degrees of reaction may be induced with the liberation of fibrin which is the genesis of lithiasis. Cuturi's experiments support this view. Cuturi (20) determined from his animal experiments three very potent conclusions: 1. Bacillus coli reaching the healthy kidney by way of the blood stream causes no lesion. 2. Bacillus coli in the kidney complicated by calculus provokes

pyelonephritis and pyonephrosis. 3. Experimentally by separation or ligation of the rectum for twenty-four hours one obtains a pyelonephritis by the passage of Bacillus coli to the kidney by way of the blood, after ligation of the ureter. Bumpus and Meisser (21) of the Mayo Clinic have recently isolated an organism with marked selective affinity for the kidney. These live bacteria have been placed in devitalized teeth of animals and in several months renal calculi appeared.

Distribution.—Common in India, Egypt, China, Central Asia, and very prevalent in the eastern colonies of England. Although urinary calculi are moderately frequent in the United States, the disease does not appear to be endemic.

Race.—It is curious but nevertheless a fact that there has not been a single case in the negro at the Johns Hopkins Hospital; Howard Kelly in his broad experience has never seen renal calculi in this race. If infection plays any rôle, why is the colored race exempt?

Heredity.—Although in England there are a number of cases on record with definite hereditary and family history of stone, however, in this country it may be said to play an ill defined rôle.

Age and sex.—In this country it occurs in the early and midadult life. In Egypt, England, and China the disease is very common at all ages and in both sexes, males slightly more liable than females.

Food and drinking water.—These play an important part; hard water (calcium salts) must be avoided. That hard water is a factor in the production of stone may be noted from the fact that since the surface wells were closed and softer tap water was introduced there is a marked diminution of the disease in South Staffordshire (22).

Infection.—Collins (23) thinks it would be difficult to believe that infection plays any considerable part in the origin of stone during uterine life or in the very young infant. Martha Wollstein (24) thinks that faulty metabolism and infection in the mother may be the underlying causes of renal calculi.

Associated infectious diseases of children.—Joseph (25) maintains that thirty per cent. of his cases were associated with diseases of the respiratory tract, and twenty-five per cent. were associated with diseases of the alimentary tract; these facts are not to be lost sight of in our diagnosis of renal calculi.

Contributory factors.—Stasis of urine from obstruction may cause calculi. Frontz (26) says that congenital valves of the posterior urethra causing urinary retention in children may cause vesical and renal calculi. English (27) maintains that congenital narrowness of the urethra in children under two years of age is a factor in lithiasis. Hunner (28) believes that strictures of the ureter are often responsible for renal calculi.

PATHOLOGY

The pathology of stone in the kidney is the result of two factors: obstruction, or obstruction plus infection. We therefore have aseptic and infective lesions. Under aseptic lesions we have a chronic nephritis which depends upon the original cause of the lithiasis and is aggravated by the calculus. It is a diffuse nephritis possibly commencing in the epithelial lesions and accompanied by interstitial changes. At first the kidney may appear normal, or increased in size, later contracts and becomes granular, the capsule becomes adherent and small cysts may form. Later advanced interstitial nephritis with atrophy or hydronephrosis and then atrophy occurs. Perinephritis may also follow. Infection of the stone kidney may take place by the blood stream, or may be ascending. In the great majority of cases the infection is hematogenous. Pyelonephritis, pyonephrosis, and perinephritis may occur. Calculi have been found coexisting with malignant growth of the pelvis. Bugbee and Martha Wollstein (29) in a study of the pathology of the urinary tract in infants performed five thousand autopsies, and among other pathological conditions from birth to five years of age found calculi in 113 infants. The fact that many calculi were found in infants a few months old shows that calculi may be present from birth, and it is fair to assume that they are more common in infants than has generally been supposed, and that many an indefinite colic is due to lithiasis.

SYMPTOMATOLOGY

The symptomatology of nephrolithiasis in infants and in young children assumes many and varied forms. 1. The type with reflex nervous irritation, causing vomiting, and convulsions or nervous fits resembling chorea. 2. The type with toxic manifestations causing coma (uremic). Although many of the acute infectious diseases of childhood are ushered in with convulsions, it behooves us to bear in mind nephrolithiasis, for it is a common manifestation. 3. Those with contractions of the abdominal muscles having colic not unlike the intestinal colic of infancy. 4. Those with definite symptoms of renal colic of the adult type. In some cases there are few symptoms and of quite an indefinite nature, particularly in infants and younger children. We, therefore, must depend largely upon the history past and present, which history is our chief source of information. The younger the child, the less reliance can be placed on its subjective symptoms.

It is important to determine whether the child is prone to digestive disorders or disorders of the respiratory tract as these are often associated with renal calculus. Renal colic in the infant presents an entirely different picture from that of the adult. The acute pain caused by the calculus in its attempt to descend to the bladder is usually ushered in by vomiting and a series of convulsions, and in the older children nervous fits characterized by irregular and spasmodic muscular movements. This reflex irritation is due to the unusual susceptibility of the nervous system in infancy and childhood early. At times the convulsions may be due to the toxic influence of urea retention. In older children there may be localized tenderness and pain over the affected region, frequent urination, retention or suppression. Hematuria, unlike that of the adult, is rare. Pyuria, chills, and fever depend upon infection coexisting. While it is true that both convulsions and colic are largely of intestinal origin, it cannot be denied that in childhood both are frequently of renal origin.

DIAGNOSIS

The diagnosis of renal calculus in the infant is by no means easy. Calculi may be present without giving any signs, more often the signs are present but unrecognized and misinterpreted. However, a painstaking history and physical examination are very helpful. Too often chills, high and fluctuating temperature, and pyuria are dubbed pyelitis without any further study; likewise, colic is too often ascribed to the intestines. A complete uranalysis including a careful microscopic examination for blood, pus and infection is essential. X ray of the entire genitourinary tract will almost always reveal a calculus. Carl Beck (30) says that by means of x ray a definite diagnosis in suspected lithiasis can be made in each and every instance. A stereoscopic examination must be done when shadows are present in the ureter. Cystoscopic examinations should be done, this is successfully accomplished in infants a few days old. This procedure presents no more difficulties nor is associated with any more risk than that in the adult. Why not give the infant the benefits resulting from a thorough examination. Hinman (31) properly said that it is a greater error to miss making an early diagnosis through neglect of proper examination than to mistake the indication and unnecessarily subject the child to the examination.

TREATMENT

The treatment is essentially surgical. Renal calculi lead to greater destruction of the renal tissues than any other surgical lesion. In all cases delay means nephrectomy whereas a conservative procedure may have sufficed at an earlier stage. The views of continental urologists, Brongersma, Tardo, and others (32) are largely in accord with those of American urologists. Pyelotomy is the operation of choice where possible. Nephrotomy is often followed by infection, necrosis and late bleeding with partial destruction of the function of the kidney. There are unquestionably many cases where nephrolithotomy is indicated, such as of cortical stones firmly fixed in the minor calices. Brash and Judd (33) advise the combined pyelonephrolithotomy in cases in which the calculus is not readily accessible through the pelvis. In ureteral calculi manipulations with ureteral catheter, or indwelling catheters for a short period should be given a thorough trial. Where there is an extensive infection coexisting with the calculus, or where there are many calculi and the phenolsulphonephthalein is below ten per cent., nephrectomy is indicated.

SUMMARY

Report of a case of bilateral lithiasis, renal, ureteral, and urethral, in a male, eight years of age, necessitating the following operations: External urethrotomy, suprapubic cystotomy, and nephrectomy. Patient had an uneventful recovery.

1. The general practitioner as well as the pediatrist is not availing himself of the advantages and opportunities offered by the genitourinary surgeon in the diagnosis of lesions of the genitourinary tract in children.

2. There are entirely too many cases of calculus diagnosed as pyelitis and intestinal colic in children.

3. Pyuria alone is sufficient indication for cystoscopic study.

4. There is no more difficulty nor danger in doing a cystoscopic examination in a child than there is in an adult.

5. The morbidity as well as the mortality will be curtailed if the child is given the benefit of a complete urological examination.

6. Early diagnosis of lithiasis may be relieved by a conservative operation, whereas delay means sacrifice of the kidney.

7. Graded operations are often indicated in multiple and bilateral calculi.

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The author's references will appear in his reprints.

Treatment of Tuberculous Joints in Children

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The treatment of tuberculous joints in children has in general been most discouraging. The duration of the disease and its persistent crippling deformities have made the surgeon regard its arrest or cure with pessimism. The adult patient presents a different proposition and a simpler solution, but the majority of bone and joint tuberculosis is found among children. The disease usually appears in the bone while its chief manifestations are evidenced in the joint. In about five thousand cases of tuberculous disease treated at the Ruptured and Crippled Hospital, seven eighths of the patients were less than fourteen years of age and about seventy-five per cent. were in the first decade. The disease is rare before the age of two, most of the cases occurring between three and five.

In spite of a few who strongly advocate an early operation, most surgeons at present prefer to pursue a more conservative course. The conservative advocates consider the time element as a negligible quantity in the treatment of children. The remarkably successful results of Rollier in Switzerland and groups of surgeons in France, England, and America certainly bespeak in favor of the socalled outdoor treatment.

One of the earliest treatments must have been rest in bed. Meanwhile, in spite of careful nursing and good food, contractions developed and sinuses appeared, thereby convincing physicians that there must be a better method of treatment. Later, braces were introduced to prevent the patient from becoming hopelessly bedridden. Still the disease

progressed and as a further aid in the prevention of deformity, plaster of Paris came into use. The use of traction alone or in combination with these other agents also was a great step in the reduction of muscle spasm and pain. Some of the joints so treated became ankylosed, and out of these results grew the idea that a stiff or ankylosed joint in good position was the most that could be desired.

Absolute absence of the normal function of a joint is bony ankylosis while its mobility is a physiological function. Because a part is or has been diseased, should it mean a loss of *all* motion? Should it mean *absolute* fixation of the joint either attained by operation or induced by persistent and continued immobilization with plaster?

Based on this reasoning a number of fresh air homes for bone and joint tuberculosis in children have been started. The increasingly successful results of these outdoor hospitals seem to prove conclusively their value to the community. Jones and Lovett even state in their book that in the future a children's hospital in the town limits will be looked upon with forebodings. The best known of these outdoor hospitals is that one established about twenty years ago by Rollier in the mountains of Switzerland, over five thousand feet above sea level. Another equally interesting is the Seashore Clinic at Berck Plage, France. Whether seeing the deeply tanned, mahogany colored skin of Rollier's patients, or one of the six thousand patients being treated at the seashore in France, one is struck by the robust condition of the patient, the excellent tone of the muscles, and, what is most remarkable, the range of painless motion in the affected joint. One school stresses the benefit of the mountains in a high altitude. Another gets excellent results without mountains and at sea level.

The aim in all these cases is mobility. It is not obtained in all cases, but is secured in a larger proportion than one would think possible after seeing and believing that ankylosis in a good position is the most one can hope to give these patients. Splinting and traction are not neglected, and though plaster is used very little, yet in the acute stage strict insistence is made upon the absolute rest of the joint from movement. The proper application of sunlight is greatly stressed, which in brief is a gradual exposure until the whole body has been tanned, using the early morning sun in preference to any other time. With the cardinal factors of rest, open air, and good food there is general agreement. These have been called the modern methods of treatment, but in reality they are a combination of previously known methods more intelligently applied.

Rest should be enforced, uninterrupted and prolonged, as both Thomas and Hilton taught. Rest is desirable so long as the febrile stage continues, just as in pulmonary tuberculosis. Rest in bed must be continued with proper splinting and traction so long as the spastic condition about the joint remains. The small amount of pain complained of in the cases seen at Rollier's clinic was remarkable, but in no case seen was the part absolutely immobilized. Rest with traction is not immobilization but a restriction of motion. We do not immobilize any other part when diseased, though we may try to put it at rest. We limit its activity, but do not immobilize. The old idea that ankylosis follows rest, though it be interrupted, prolonged, and continued, was dispelled years ago by Thomas, who stated that "the treatment of articular inflammation by enforced rest never has been nor ever will be a factor in producing true ankylosis. Stiffness and limitation of motion may result, but this is far more serviceable than any ankylosed joint to a child.

The time comes in these cases when weight bearing is to be permitted, and this time is most difficult to determine. After all signs of activity have disappeared, both by a physical examination and by repeated radiograms taken at regular intervals, all traction and apparatus should be removed from the part and a careful examination, including the exact measurements of movement possible in the affected joint, should be made. Then after the patient has been allowed to remain free in bed for a week, a socalled secondary diagnosis of restoration should be made. These tests should be repeated several times in the month before weight bearing is allowed and their results must be the determining factor in the future course of the surgeon.

Fresh air treatment is not a recent discovery and has been used for conditions other than tuberculosis, but at present there is a great deal of argument and study about the reasons for the benefit received. At least two factors, that of wind and sunlight, play an important part in all out of door treatment. Whether the benefit derived from the wind is because it is a cooling agent to the sun's rays and a tonic to the general constitution, as Rollier believes, whether its principal action is due to its velocity acting on the organism as a masseur would exercise the muscles by rubbing and stimulating the local circulation, which Calvé believes, or whether it is due to some other factor, it is certain that it is a most valuable ally in the outdoor treatment.

The reason for the benefit derived from the sunlight is also little known. We know that the short wave lengths, of which the ultraviolet are the most important, are stopped in the outer layers of the skin and produce marked pigmentation. In large doses the ultraviolet rays possess marked germicidal power, while smaller doses stimulate epidermal cells and produce pigmentation. Unless the strong penetrating long rays of the sun are checked by the cool moving air, the skin and body become too hot and loss of tone results. This is especially evidenced by the patient becoming irritable or drowsy when the sun treatment is too enthusiastically given.

The one tissue that does not appear to have been given proper credit is the skin. It is the first line of defense against invading organisms, but in addition it seems to possess some special resistance to the bacillus tuberculosis. The recent work of Griffith showing that "the attenuation of Bacillus tuberculosis is apparently the rule in skin lesions," would indicate that normally the skin possesses more resistance to this particular germ than other parts of the body affected by tuberculosis. Rollier believes that in the skin we have a tremendously potent factor, not only in arresting the disease but possibly in possessing the ability to produce an immunity to bone tubercu-

losis. Whatever importance the pigmented skin may possess or acquire, certain it is that the many attempts to give an indoor pigmentation by the ultraviolet or other lamp have not resulted in the pigmented skin possessing qualities as beneficial to the body as skin exposed to sunlight and wind.

Good food is essential and should be given as in all febrile conditions. Little meat is necessary at all times and all fattening foods should be avoided, and instead plenty of fruits and vegetables with an abundance of water should be given.

CONCLUSIONS

1. Conservative measures should be used in the treatment of tuberculous joints in children.

2. The restoration of function, rather than ankylosis, should be the aim in the great majority of these cases.

3. Open air hospitals for the treatment of tuberculous joints in children should be more generally established—preferably in the mountains or at the seashore.

59 East Fifty-fourth Street.

Anemia Infantum Pseudoleucemia (Von Jaksch)

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Gretzel in 1867 was the first to mention this condition, but it was not until 1889 that a clear clinical description was reported by Von Jaksch, with the result that his name is now identified with this condition.

Von Jaksch anemia is an anemia peculiar to early infancy and is characterized principally by a slow and progressive pallor, a large hard spleen, at times a large liver, and frequently by an enlargement of the superficial lymph glands. The blood picture is not pathognomonic, showing the usual picture of a secondary anemia with blood destruction and blood regeneration. The regenerative feature in this condition, however, is characterized by the constant presence of normoblasts, although other regenerative elements are usually present. The white cell elements are increased, more so than is usual in secondary anemia, and at times reach such a high count that with the marked anemia and large hard spleen, it is difficult to separate this condition from a true splenomedullary leucemia. The white cell elements are as a rule about evenly divided between the polymorphonuclears and the lymphocytes, although not infrequently the lymphocytes predominate. Eosinophiles are reduced and in the severer forms myelocytes are found.

There are many authorities who refuse to look upon this condition as an entity, and consider it merely a form of secondary anemia. It is true there are no striking pathognomonic symptoms and, furthermore, the underlying agent is unknown. The fact, however, that the spleen is constantly enlarged and frequently associated with a history of rickets and gastroenteric disturbances would probably indicate a toxic agent as an etiological factor. The toxic agent may not be the same in all cases, but it may be that the formative blood organs and filters, such as the bone marrow and the spleen, react under certain conditions as yet unknown, in a constant way producing this symptom complex. It matters little whether this condition is a true entity and is caused by a specific agent, but from the clinical side this picture is sharp enough to say that a certain group of secondary anemia forms a distinct picture of itself.

Beside the blood picture of a varying secondary anemia, the pathology has nothing distinctive. The spleen is large and hard with a considerable growth of connective tissue causing a gradual disappearance of the Malpighian bodies. At times there may be also present a perisplenitis. The liver often is enlarged and hard and shows an increase in connective tissue formation, but the liver cells themselves are unchanged. The superficial lymph glands may be enlarged and show evidences of a simple hyperplasia. The bone marrow is usually very red, with evidences of an active regeneration of the blood elements.

Von Jaksch anemia is usually evidenced in early infancy between the third and sixth months with a slow but progressive pallor. The child does not necessarily have to be emaciated and its weight may be up to standard, but it is flabby and soft. This pallor is peculiar, is not ordinarily seen in other anemias, and is difficult to describe. The spleen enlarges and becomes hard and may fill up the abdomen, causing a distinct protuberance. The liver too may enlarge, but not in proportion to the spleen and frequently the superficial lymph glands are also enlarged. Gastroenteric disturbances are common and not infrequently gastrointestinal hemorrhages occur, more so in this condition than in any other type of splenomegaly. Petechia and hemorrhages from other parts of the body may occur.

These cases may progress unfavorably until death ensues from some intercurrent condition or they may reach a certain stage and then proceed to a cure. Prognosis here is more favorable than in any other form of the distinctive anemia. This anemia must usually be differentiated from Banti's splenomegaly and Gaucher's disease. The history, time of occurrence, blood picture, and hereditary factors will all aid in the differentiation.

Case.—The patient, M. S., male, was seven months old at the time of the first observation, with a family history absolutely negative relevant to this condition. The child was a full term baby, normal delivery, and breast fed from the very beginning, with some table diet added to his régime latterly. One striking feature noticed by the mother was a progressive pallor coming on for the past four months,

so marked that it was noted by friends and relatives. During the same period the child was subject to gastrointestinal attacks and at times had a cough with slight elevation of temperature. There was no history of any previous infection or contagious disease. Ten days before admission the child had shown continuous tarry stools and vomited rather frequently after meals.

On admission the child was acutely ill, very anemic, with pale conjunctivæ and lips and a slightly jaundiced skin. The spleen was hard and one inch from umbilicus and the liver's free edge almost down to the umbilicus. Other examinations of body were negative.

The blood examination at the time of admission was: Hemoglobin, 16 per cent.; red blood cells, 1,200,000; white blood cells, 52,000; lymphocytes, 54 per cent.; polymorphonuclears, 34 per cent.; and transitionals, 12 per cent. A transfusion which was immediately ordered and given within three hours, increased the hemoglobin to 40 per cent. Three days later blood examination showed hemoglobin, 45 per cent.; red blood cells, 1,950,000; white blood cells, 6,200; polymorphonuclears, 43 per cent.; lymphocytes, 57 per cent. Several blood examinations at intervals of two days showed a steady improvement in the blood and after the last examination made two weeks after admission the hemoglobin was 62 per cent; red blood cells, 3,760,000; white blood cells, 14,000; polymorphonuclears, 36 per cent.; lymphocytes, 64 per cent. Bleeding time after transfusion was five and a half minutes and coagulation time one and a half minutes.

The interesting feature of this case was the rapid and almost spontaneous cure following transfusion. Immediately thereafter the child's general appearance was much improved, and although before transfusion it had passed tarry stools, these appeared practically normal the following day. Beside the general improvement in the child's appearance, it was interesting to follow the retrogression of the spleen and liver, so that two weeks following its admission to the hospital, except for a slight reduction of the red blood cells, the child was both physically and clinically well.

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The Present Status of the Control of Scarlet Fever*

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During the past year there have been greater definite advances in our knowledge of the etiology and treatment of scarlet fever than in any of the other communicable diseases. Some of these advances are now sufficiently stabilized to permit of their being interpreted as important factors in the control of this disease. I propose to discuss briefly this subject under four divisions; first, etiology; second, skin tests; third, immunization with toxin; and fourth, serum treatment.

ETIOLOGY

For many years the hemolytic streptococcus was suspected and studied as the causative factor, because of its persistent presence in the throats of scarlet fever patients, and in blood cultures, and in the secondary complications such as otitis media, adenitis, nephritis, pneumonia and septicemia. This disease is all the more remarkable in that the organism penetrates the blood, so that there is a true septicemia, and yet the patient often recovers. In other diseases, if the organism enters the blood stream it means a fatal outcome.

One important point that has been brought out in the more recent investigations is that the disease is not transmitted through the skin, for the scales during the desquamation stage do not carry the infection, as was long supposed. The disease is transmitted only through air borne droplets of saliva or nasal discharges, or by contact with articles soiled with saliva, nasal secretions, or the discharge from some secondary complication, such as otitis media; or through contaminated milk.

A few years ago Dochez and his coworkers developed a method for the differentiation of the biological types of streptococcus hemolyticus. This led to further studies of the type that had been found to be associated with scarlet fever. Dochez finally demonstrated that the type of hemolytic streptococcus found in the throats of scarlet fever patients was a specific type which could be differentiated from types causing other forms of angina and general septic conditions. The work of Dick and Dick showed that the scarlet fever streptococcus may be distinguished by growing it in broth and determining whether or not it produces a soluble toxic substance in the filtrate which will give a skin test neutralizable with convalescent serum.

Many attempts were made to produce scarlet fever in animals, including dogs, monkeys, rabbits, rats, mice, hogs and guineapigs. By improved technic, Dochez was able to produce the disease in hogs and guineapigs, more especially in guineapigs. But animals proved unsatisfactory for producing conditions that could be definitely identified as scarlet fever, and so Dick and Dick used human volunteers for purposes of producing experimental scarlet fever.

SKIN TESTS

In the course of their investigations the Dicks attempted to produce skin reactions with the same culture of the hemolytic streptococcus that had caused the disease. They injected intradermally small quantities of the toxin prepared by growing the scarlet fever streptococcus in broth, and finally they perfected a skin test similar to the Schick test. This skin test, which is now known as the Dick test, is made by injecting intradermally in the forearm

*Read before the Ramapo Clinical Club at Suffern, N. Y., March 26, 1925.

0.1 c.c. of scarlet fever toxin in correct dilution and using a similar amount of heated toxin in the same dilution for a control. A positive reaction occurs in twenty-four hours and is indicated by a red, inflammatory area about two centimetres in diameter. Unlike the Schick test, however, the reaction from the Dick test fades rapidly after twenty-four hours; so the test must be read twenty-four hours after it is made and not four days afterwards, as in the case of the Schick test.

The Dick test seems to be reliable for detecting those persons who are susceptible to scarlet fever, but it is complicated by the fact that one negative reaction does not always seem to indicate immunity. In our studies we have reapplied the Dick test at intervals of a few days on the same persons, using the same toxin; and we have observed definite positive reactions in persons who occasionally showed a negative reaction. Moreover, such negative reactions were both preceded and followed by positive reactions within a few days. Furthermore, among a series of 286 negative reactors, in eight persons scarlet fever developed subsequently. Therefore, it would seem advisable for all persons showing a negative Dick reaction to be retested and for at least two negative tests to be obtained before considering the person immune to scarlet fever.

The phenomenon of negative reactors among susceptible persons is to be explained by assuming that the scarlet fever toxin has weak binding power with the tissue cells, in which capacity this toxin differs from diphtheria toxin; for, as you all know, a negative Schick reaction means that the person is positively immune to diphtheria. We may, therefore, assume that some intradermal injections of scarlet fever toxin are made in areas of the skin where, for some reason, the toxin is absorbed too quickly to permit of its characteristic irritating effect on the skin cells being produced.

IMMUNIZATION WITH TOXIN

Another factor that still remains to be satisfactorily disposed of is the matter of immunization with the scarlet fever toxin. When the toxin is used for immunization, the dose employed is equal to a certain multiple of the amount of toxin used for the Dick or skin test. Hence, the dose is expressed as consisting of a certain number of skin test doses of toxin. At first comparatively small doses were used, namely, 125, 250 and 500 skin test doses, given subcutaneously at intervals of one week similar to diphtheria toxin antitoxin. Out of 1,500 children so immunized, when the Dick test was reapplied two or three months later, about fifty per cent. of them still showed positive Dick reactions, indicating that no immunity had developed. In another series of 900 cases in which the dose used was 125, 500 and 1,000 skin test doses, at the end of three weeks retesting by the Dick method showed eighty per cent. negative reactors or eighty per cent. immunity. Again, in a series of 3,000 cases, the immunizing doses consisted of 1,000, 2,000 and 4,500 skin test doses; and, after six weeks, fifty per cent. were still susceptible, as shown by retests. On the other hand, out of ninety-seven positive reactors who were subsequently given the immunizing treatment with toxin, in sixteen scarlet fever developed before the immunizing treatment was completed; in nine after the first immunizing dose; in four after the second dose; and in three after the third dose. The doses used in this series were 125, 250 and 500 skin test doses.

In some cases, initial doses of 1,000 skin test doses have caused reactions simulating true scarlet fever: rash, fever, nausea and vomiting and typical strawberry tongue. Similar symptoms have resulted from even smaller doses. Zingher in New York is now giving four doses for immunization; beginning with 250 skin test doses, followed by 1,000, 2,000 and 3,000 skin test doses. He believes that the small initial dose confers sufficient immunity to protect against constitutional reactions when the larger doses are subsequently given. Nesbit in his work in the public schools of Gary, Indiana, used 4,000 skin test doses for the final dose.

Hence it would seem that the best dose for immunization had not as yet been definitely established. This is one of the problems that we are now trying to solve. Moreover, we do not yet know how long the immunity will last from the toxin injections; but there is reason to believe that the immunizing treatment has already produced results well worth while, although improvements doubtless will be made. Unquestionably, immunization with scarlet fever toxin is useful in controlling epidemics of the disease in institutions; for the immunity produced is usually of sufficient degree to check the outbreak in two or three weeks. Moreover, the immunity seems to be of sufficient duration to make it of clinical value in institutions and communities where scarlet fever is prevalent.

SERUM TREATMENT

In 1918 Schultz and Charlton observed that when one c.c. of serum from a normal human being or from a person convalescent from scarlet fever was injected intradermally into a patient with acute scarlet fever, a local area of blanching occurred and persisted. Mair, and more recently Dochez, called attention to the fact that in scarlet fever the general symptoms and rash depend upon the presence of a toxin in the blood stream and recovery occurs simultaneously with the formation of an antitoxin. Hence, if convalescent serum is injected into the skin of a patient in the acute stage of scarlet fever, the skin will be blanched due to the antitoxin in convalescent serum neutralizing the toxin in the tissues at the point of the injection.

Dochez states that sixty per cent. of all adults are immune to scarlet fever, for their serum will blanch the scarlet fever rash and must, therefore, contain antitoxin. Immune horse serum will blanch the scarlet fever rash in one hundred per cent. of scarlet fever cases that have lasted sixty hours. After the disease has persisted for eighty hours, the immune horse serum will cause blanching in only twenty per cent. of cases.

The new scarlet fever streptococcus antitoxin, which has just been licensed by the United States Government, bids fair to make the year 1925 memorable in the history of medicine. This new antitoxic serum will rob scarlet fever of its terrors, for the clinical results of its therapeutic use are nothing short of miraculous.

Credit rightfully belongs to Dochez for having first produced an antitoxic horse serum against the scarlet fever streptococcus, and for having tested its capacity to neutralize the rash locally in the skin in human cases of scarlet fever. Credit must also be given to Dochez for having demonstrated, with the cooperation of Blake, the clinical value of the serum in the curative treatment of scarlet fever.

Scarlet fever streptococcus antitoxin has three uses: first and foremost, is its therapeutic use in the treatment of the disease; second, it may be used under certain conditions as a prophylactic measure; and third, its diagnostic use by the blanching test.

The benefit resulting from the injection of scarlet fever streptococcus antitoxin is so marked that the physician is justified in using the antitoxin in all but the very mildest types of scarlet fever. The beneficial results consist not only in the prompt relief of toxic symptoms, but also in the lessening of the number of secondary complications. It is highly important to use the antitoxic serum early; for its effect in preventing secondary complications is most marked if used before the third day of the disease.

Blake has shown that the antitoxin must be used within the first seven days of the disease if beneficial results are to be expected; because normal antitoxin may be demonstrated to have replaced the toxin in the patient's blood from the ninth to the twelfth day of the disease. Hence, if the antitoxin is administered after the seventh day its beneficial action is doubtful, because the patient is then deriving benefit from his own normal antitoxin.

For all except toxic cases, the antitoxin may be given intramuscularly in the gluteal region; but in toxic cases it should be administered intravenously. The dose used by Blake has been from thirty to eighty c.c. in children and from forty to one hundred and fifty c.c. in adults.

Obviously the dose of this antitoxin depends upon the severity of the disease. In the clinical trials thus far recorded of the scarlet fever streptococcus antitoxin, the dose in early cases of both moderate and severe scarlet fever has been a single *intramuscular* injection of fifty c.c. of antitoxin having a potency such that each cubic centimetre will neutralize 5,000 skin test doses of toxin. This has been followed by prompt and complete relief within twelve to twenty-four hours. In severely toxic cases, higher doses (up to 150 or 200 c.c.) should be used if the antitoxin is given intramuscularly; but fifty c.c. is sufficient if given *intravenously*. If the antitoxin has a higher potency than capacity to neutralize 5,000 skin test doses of toxin to the cubic centimetre, a corresponding reduction in the volume of the dose may be made. For small children (under fifty pounds), one half of this dose is probably adequate. At present a unit of antitoxin has not been established, but probably the amount that will neutralize 1,000 skin test doses of toxin will be adopted as the unit in the near future. Then the dose can be expressed in units rather than in cubic centimetres.

The effects of the antitoxin are very striking. The rash begins to fade in six hours and the temperature drops; in twelve hours the temperature may reach normal. There is a drop in the leucocyte count and in the pulse rate, and rapid subsidence of the angina. Toxic symptoms improve in twelve to fourteen hours after intramuscular injections of the antitoxin and within three to four hours following an intravenous injection. Children often sit up and play the next morning. In adults, also, the return of well being is apparent within twenty-four hours.

Blake recently reported a series of ninety-three cases in which the antitoxic serum treatment was used. In these, ninety-two patients were cured and one died. In the fatal case the patient was treated with antitoxin late in the disease. In only ten did secondary complications develop. Hence, there seems to be indirect benefit on septic complications.

In some patients serum sickness follows the use of the scarlet fever streptococcus antitoxin just as it did in some patients when antidiphtheritic serum was used in the treatment of diphtheria before refined and concentrated antitoxin was available. Such symptoms, however, are usually of short duration and require only local treatment with some bland evaporating lotion.

The prevention of scarlet fever after exposure is somewhat complicated. In case of definite exposure the Dick test is made as soon as possible and, at the same time, a culture from the throat is made on blood agar plates. If the Dick test is negative, nothing further is done; for the person is considered to be immune. On the other hand, if the Dick test is positive, the next procedure depends upon the throat culture. If the plates show no hemolytic streptococci, active immunization with scarlet fever toxin is carried out. In case the throat culture shows the presence of hemolytic streptococci, a prophylactic dose of ten c.c. of the scarlet fever streptococcus antitoxin is given subcutaneously, preferably in the interscapular region. In small children (under fifty pounds), a prophylactic dose of five c.c. is probably sufficient.

DIAGNOSIS

The blanching test, or Schultz-Charlton phenomenon, has been made use of to differentiate the rash of scarlet fever from the eruptive characteristics of other infectious diseases, such as confluent measles, typhoid fever, influenza, and the drug rashes. This test is carried out by injecting intradermally 0.1 to 0.2 c.c. of antitoxin at a point where the eruption is most intense. After six to twelve hours, the rash—if it is due to scarlet fever—is definitely and completely blotted out in a zone of varying size surrounding the point of injection. The area is usually oval in shape with clearly defined edges, and within this zone the raised points of the eruption disappear and the skin becomes smooth. The blanched area persists throughout the disease and is protected from desquamation. In other words, there is actually a local cure in the blanched area, due to neutralization of the toxin in the tissues by the antitoxin which is injected. The most favorable time for obtaining the blanching phenomenon is during the second day of the eruption.

Scarlet fever streptococcus antitoxin unquestionably marks the greatest advance in preventive medicine during the last decade. Clinical trials indicate that this new product is destined to prove as important and valuable a factor in the control of scarlet fever as is diphtheria antitoxin in diphtheria.

Historical Medicine

Cicero in Search of a Garden

A Study in the Dubieties of a Great Roman

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> And all without were walkes and alleyes dight
> With divers trees enranged in even ranks;
> And here and there were pleasant arbors pight,
> And shadie seates, and sundry flowering bankes,
> To sit and rest the walkers' weary shankes.

In the spring of the year B. C. 45 and A. U. C. 709, Marcus Tullius Cicero was in the lowest possible state of mind. His party, the senatorial party who called themselves the optimates, had been defeated. Its leader, Pompey the Great, had lost the battle of Pharsalia and been slain. Julius Cæsar was triumphant, and completely master of the political situation. Although Cicero had sided with Pompey, he had been treated well by Cæsar despite this, and had been allowed to return to his home in Italy. Here and then his troubles began to accumulate.

One of the first things he did on reaching Italy was to divorce his wife, Terentia, apparently because she had not managed his affairs satisfactorily during his absence in Greece. Then at the age of sixty, he married his ward, a young woman named Publilia. He soon put her away because, it is supposed, she was not sympathetic over the death of Tullia, his daughter. After their separation she asked to visit Cicero. "See what a nuisance," Cicero writes.

His son Quintus was not very satisfactory; and his son-in-law, Dolabella, was a dissipated youth, and a follower of Cæsar. His domestic affections were entirely centred upon Tullia, his only daughter. Tullia was about thirty years old, and had no children. She is often mentioned in Cicero's letters, and always with some term of affection—he often called her Tulliola, his little Tullia. She had been so badly treated by her husband, Dolabella, that she got a divorce; then a few months later died in childbirth.

This was in February, B. C. 45. Cicero was inconsolable. He retired to his villa at Astura, secluded himself from visitors and friends, and poured out his grief in letters to his friend Atticus. He writes him that he sleeps badly; that he goes into the woods in the morning and stays there all day. The cheerfulness with which he used to temper the sadness of the times he had lost forever. Nevertheless, he denies that he is "broken down." He evidently has no serious depression, like melancholia, for he occupies himself with writing important works during this period. He composes his *Consolatio,* also his *De Finibus,* and the *Academica.* He began also his *Tusculan Disputations,* his *De Senectute,* and *De Natura Deorum.* These things distracted his mind, he says, but did not relieve him.

Tullia died in February. In March, Cicero, while still in his seclusion, conceived the idea of erecting a shrine to her memory. This shrine (*Fanum*) was to be more than a monument or memorial; it was to be something sacred, and in the nature of a deification to his lost daughter. "I shall use all the opportunities of this enlightened age," he says, writing March 11, B. C. 45 (his *temporibus tam eruditis*), "to consecrate her memory by every kind of memorial borrowed from the genius of all the masters, Greek and Latin."

He now writes almost daily to Atticus about the scheme to which he says he had in a way consecrated himself. Atticus seems to give him his approval and cooperation. At first Cicero thinks that his island at Arpinum would answer, but later finds it too remote. The shrine must be in an accessible and public place. None of his own several villas would do, for they might change hands; and the shrine must be in a place which would be permanent and consecrated ground, forming a memorial for all time, and immortalizing the person of his Tullia. So he must find and buy a garden suitable for this purpose. Atticus begins to suggest different places, and send agents to see about their purchase; meantime, Cicero has conferred with artists and has approved of a design for columns by Clautius.

So the quest for a proper garden goes on. Cicero's temperament is marvelously shown. The place must not be too far from Rome, he says, and not too small; or on the other hand, too large and expensive.

Cicero begins to figure up how much money he can raise for his purpose. He thinks that Atticus can get six hundred thousand sesterces (twenty-five thousand dollars) out of Hermogenes; and Cicero himself has an equal sum with him. The rest of the money he must borrow, unless his debtor, Faberius, can be made to pay up. Thus the garden was to cost over fifty thousand dollars, and Cicero evidently meant to build an expensive memorial.

Throughout the spring of B. C. 45, March, April, May, and well into July, Cicero keeps writing, urging, begging Atticus to do something. But the trouble is always in getting the right kind of a garden. At first the task seemed easy. The gardens of Drusus were available and satisfactory. Then it turned out that Drusus was a hard man to deal with and his price was high. Cotta had a little place at Ostia, which seemed as if it might do, but finally it was considered too remote and small. He now decides also that he wants a "suburban garden," one which will be frequented by people who will presumably admire his shrine and be informed of the merits of his daughter. He finds that for his purpose the gardens of Silius were preferable to those of Drusus; however, Silius refuses to sell.

During the course of his search he came to the conclusion that the garden and shrine might be a suitable place for his own declining years. With this idea in mind he investigates the lands of Damasippus and the villa of Coponius, which latter he says has a fine wood; but he does not care for woods in connection with a shrine, because few people visit a wood.

In May, he remembers that the law did not allow a person to spend more than a certain sum on architectural and sculptural ornamentation. An equivalent of this excess had to be turned over to the state. This gives further dubiety as to his garden. He finds, however, that he likes very much the gardens of Clodia, a rich lady, who was out of the city and whom he fears may not be willing to sell. Lamia had a nice place, but also would not sell at the offered price. In fact, Cicero seemed to pick out places that either cost more than he thought he should pay or were not for sale, or did not suit.

In May, his mind turned towards his own villa at Tusculum as a last resort. He dreaded selecting this place, however, because his daughter died there, and he thought it would "open his wound" to live at such a spot.

By the middle of May, he rather centres his mind on the gardens of Scapula. These were for sale, but they were to be put up at auction, and Cicero arranged to attend this auction and buy, he says, "if it is safe to do so." His preferences, he writes to Atticus on May 11th, are first the garden of Scapula, then those of Clodia, Drusus, Cusinius and Trebonius. He writes to Atticus nearly every day about the various gardens, and about raising money to pay for them. Even up to the last of June he says, "By all means let me have a suburban garden."

The auction of Scapula's garden is fixed for a period early in July, and he writes on July 5th about attending it. The auction was postponed, however, and apparently Cicero did not eventually attend. There is but one further notice of buying a garden in his letters. In fact, there were no letters to Atticus between early August and December, perhaps because they were together in Rome.

During these later months of June and July, Cicero was busy writing and publishing some of his most important works. Cæsar was planning to come to Rome in August, and there was much discussion as to Cicero's attitude toward the Dictator, and as to his again participating in politics. Between his book publishing and his politics, the matter of the garden rather fades away. The last mention of it is in July, when he still speaks of getting a suburban garden.

Atticus probably had disapproved of the plan from the start, but did not wish to hurt Cicero's feelings by opposing a project so dear to his heart. However, he easily managed to find objection satisfactory to Cicero's dubiety as to every special place; and he made Cicero perhaps finally realize that a garden was too expensive and that there was a certain impropriety in trying to pay divine honors to a young lady who was only an amiable, affectionate and devoted daughter.

Although no garden is announced as bought, it is not impossible that Cicero did erect somewhere a shrine; for, in June B. C. 44, a year later, he writes that his business man, Eros, had set aside receipts from certain paying concerns, to be used for the shrine. *"Ad illud fanum depositum."* Let. XV-15.

Cicero's search for a garden is certainly the story of the workings of a dubious mind.

A phase of this was shown later, after Cæsar was killed, and Cicero was brought into relations with Antony and Octavianus. Cicero was consistently loyal to his belief in the sacredness of the Roman Constitution and of the Republic; and he also consistently attacked Mark Antony. But he could not settle his mind as to the opposing factors in Italy. He wasn't sure of Octavianus. He could not decide whether to leave the country and save his life or stay in Rome, work for the Republic and secure the cooperation of Octavius. He started once for Greece, and even had boarded a vessel, then turned back and went to Rome. He stayed and worked there too long, and the result of this particular dubiety was that the powers at Rome despatched a body of soldiers, caught Cicero as he finally was trying to leave the country and cut off his head and his hands, these being brought to Rome and presented to Antony.

Now while Cicero had in a striking degree the traits of a psychasthenic (dubiety and precisions), he was Rome's greatest constitutional lawyer, and its most eager pursuer of philosophy. He wrote verses in early life and was a very good poet and he first and alone made Latin a literary language. For his public work he was acclaimed father and savior of his country.

He was one of the very few really great men of that day who, while not exactly and entirely sincere, was genuinely and fundamentally honest and truly patriotic. He achieved all the honors of Rome's political life, having been questor, edile, prætor, consul, senator and governor of a province.

He was, beside all this, a man of great personal charm—witty, conversational, fond of his family, his friends and of city and social life. He entered into all the agreeable activities of both the socalled highbrow and lowbrow type. Always concerned for the health of others, he almost never refers to his own personal condition, and, while egocentric, he had no hypochondria.

He was tall, thin and active, but dyspeptic and lived on a diet.

Cicera was a great lawyer and debater, but he was never a good administrator and he seemed to lack personal initiative as he grew older.

Although he has been the subject of severe criticism by certain monarchical German writers (Drumann, Niebuhr), the majority of sound historians find few Romans who achieved or deserved more eminence than Tullius Cicero. They might well do this, for the Romans were rather stupid, dull, or uninteresting personalities.

Cicero was the cleverest personality of his age and he created a kind of oasis in a socially arid land. The Roman writers themselves, e. g., Catullus, Juvenal, Tacitus, all paid tribute to his memory. *"Salve, primus omnium parens patriæ appellate,"* said Pliny in his *Natural History.*

53 West Fifty-third Street.

Contributors to the Science of Medicine

Thomas Henry Huxley

Huxley was one of that band of mid-Victorian giants of science which included Darwin, Spencer and Tyndall. Huxley, like Darwin, spent some years on board ship studying natural history. He was one of the clearest thinkers and most lucid writers that ever lived, and while he did little original work, he did yeoman service in popularizing science and especially in explaining to the public the theories of Darwin. Lord Riddell contributes to *John O'London's Weekly,* May 2, 1925, an interesting sketch of the life of Huxley and pays him the compliment of saying that whatever power of accurate thinking or of writing he, Lord Riddell, possesses he owes largely to Huxley. He goes on to say that in some respects Huxley resembled Voltaire. He was the most prominent member of a brilliant group of educationalists who popularized science and taught people how to think and how to judge things free from dogma or bias. For thirty years dating from 1865, (Huxley was born in 1825) he was one of the star turns on the polemical stage, sharing the honors and holding his own with Gladstone, Disraeli, Bright, Spurgeon, and it may be added with Samuel Wilberforce and other celebrated performers of that time. No man was more admired or more abused. He was a sort of scientific prophet, preaching the advantage of unbiased inquiry and clear thinking.

Today, his type has disappeared. There is no one who can deliver the precise kind of goods that he provided. Perhaps this is because they are not wanted. The fashion has changed. The twentieth century does not enthuse about abstract ideas, religious discussions or scientific theories.

In 1860, however, there were ample opportunities for discussion and controversy. The evolution theory was setting all thinking persons and those with traditional religious views by the ears. The Darwinian theory upset the tenets of the Old Testament as to the creation of man and controversy waxed warm on the subject. It resolved into a fight between science and the churches and Huxley was the champion of science, and a doughty champion he showed himself. Huxley coined the word "agnostic" to label his attitude to what he considered unproven statements. He was not a doubter in the sense that he was not open to conviction, but he required extremely strong, in fact unassailably strong, evidence before he was convinced. Truth with him stood paramount and it is possible that he placed too much faith on what are termed facts. But he was an earnest inquirer and investigator and weighed evidence with the utmost impartiality of which a human being is capable. In a way he was selftaught, which is remarkable when it is considered how vast a store of knowledge he accumulated, although after all it is a better method of stocking one's brains than the methods followed in schools. At the age of twelve he is depicted as sitting up in bed at dawn reading Hutton's *Geology.* At the age of thirteen his inquisitiveness, or it may be more correctly termed his thirst for knowledge, was the cause of a serious misadventure. At a postmortem he attended he contracted blood poisoning which left a permanent mark on his health. When of the age of fifteen years and a half, he was apprenticed to a doctor, which was the vogue at that period. At seventeen he entered Charing Cross Hospital, having won an entrance scholarship and had a distinguished career as a student. He was only twenty when he published his first scientific paper. In the same year he joined the Naval Medical Service and was gazetted surgeon to H.M.S. *Rattlesnake,* which was told off to survey the Great Barrier Reef and New Guinea. On this expedition he did splendid work as a naturalist. He was made Fellow of the Royal Society at the age of twenty-five and four years later resigned from the navy and was appointed lecturer on natural history at the School of Mines, a position he held for thirty-one years.

His subsequent career was one of unchecked success, save that he made little money and suffered from ill health. He was given, as Lord Riddell says, practically every honor open to a scientific man. Huxley was a great zoologist, and his contributions to science related chiefly to zoology and to paleontology. He was one of the first to attack the system of classification formulated by Cavier, who divided the animal kingdom into four branches supposed to have been designed by the Almighty before the Creation. Huxley objected on the ground that this classification was based on mere theory, and that the only true method of classifying animals, insects and fishes was to examine and compare them. Huxley was a man of very great scientific attainments of which possibly he did not make full use; that is, that he rather took upon himself the rôle of explaining the scientific discoveries and theories of others than doing original work himself. He loved science for its own sake and when he had convinced himself that a discovery or theory, such, for instance, as that of Darwin's theory of evolution, was correct or based on sound premises, no trouble was too great to him to render comprehensible to the public the reasons for this belief. He was indeed Darwin's Boswell, not in the intimate sense that Boswell made known the life of Johnson, but in the sense that he made known to the man in the street the progress of science as indicated by Darwin's views and he did this in plain and clear language.

Thus the general public took his scientific attainments on trust and he was known to them as a popular writer, speaker and controversialist. If it had not been for Huxley, Darwin's views might have fallen flat except among the inner circle of scientific men. However, he wrote some excellent

small books on scientific subjects, and those on physiology and physiography had a wide sale. Perhaps his book on "Hume" in the *English Men of Letters* series was the best of his popular books. He had the gift of clear expression developed to the highest degree and used the most apt metaphors to illustrate and drive home his points. He hated loose thinking and loose expressions and distrusted politicians and political churchmen who to gain a temporary advantage over an opponent in argument were not averse from employing such means.

Huxley's views, or rather his manner of propounding them, would not have appealed to the people of these times. We are today tolerant to an extent which would have been anathema to the mid-Victorian philosophers who thought it their duty to lay down the law in a dogmatic way. The tolerance of the present day goes to such lengths that it is almost impossible for us to understand, the bitter feelings aroused by Darwin's pronouncements as to the origin of species and the descent of man, which antagonized to the point of overturning the long held beliefs founded on the Book of Genesis. Darwin and Huxley were stigmatized as atheists and sinners of the deepest dye and families were divided and friends separated in accordance with the views they severally took on the subject. Nowadays, churchmen in high office admit that there is something in the evolutionary theory and endeavor to fit it in with the teachings of the Bible.

It is to the lasting honor of Huxley that he was so great a lover of truth and held so strongly to his convictions that he never hedged or deviated by a hair's breadth from his beliefs and expressed himself in strong vigorous language, no matter whose susceptibilities he hurt. He died at the age of seventy, having been one if not the greatest factor in laying the foundations for the spirit of careful unbiased investigation, the keynote of modern science.

Lord Riddell in his sketch of Huxley makes somewhat of a digression from the main theme by drawing attention to the fact that Huxley lived in a dyspeptic age. Most of the well known philosophers of the mid-Victorian era suffered grievously from dyspepsia. Darwin, Spencer and Huxley were chronic victims of gastrointestinal disorders. However, in spite of this happening most of them reached the ordinary span of life allotted to mortals and some exceeded it considerably. Although Huxley was renowned throughout the world for his outstanding knowledge of science he made little money and was generally in pecuniary straits. As proof of the love and esteem in which he was held by his friends, in 1873 when his health was very bad Darwin sent him £2,100 contributed by eighteen of his friends. Huxley's name will endure as the great protagonist of the evolutionary theory; as an honest truthseeking philosopher, and as the man who did more than anyone to place science on a firm foundation, that of careful and impartial investigation, to take nothing for granted.

The Origin of Syphilis

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Since the death of Iwan Bloch, the protagonist of the American origin of syphilis following the teachings of Professor Rollet, of Lyons, and his collaborators, Professor Sudhoff has attempted to accumulate proofs and arguments in favor of the precolumbian presence of the disease in Europe. Now Professor Gumpert comes to the front and taking up separately in succession the twenty-two propositions put forward by Sudhoff to assert his point of view, he shows beyond question that every one of them can be contradicted and this he proceeds to do. We have always regarded the precolumbian doctrine of Sudhoff as the weakest production of this learned historian of medicine.

Within the last few months Professor Barduzzi, of Sienna, has emitted the opinion that syphilis in Italy dates only from the epidemic of 1493. He maintains that the Spanish contracted the disease in America and brought it back with them to Europe. As proof of his assertions, Barduzzi puts forward the following documents: 1. Oviedo affirms that in 1493 he saw at Barcelona the companions of Columbus who had followed him on his three voyages to America and that he was able to verify the American origin of the new affection, which was horrible, contagious and lethal. With the exception of the Spanish this disease up to that time had not attacked any European. The soldiers composing the army of Gonzalve of Cordova transported the disease to Naples, where it was transmitted by women to the Italians and French of the army of King Charles VIII. 2. Another witness whose testimony has weight is Rodrigo Diaz, who states that the epidemic appeared in Barcelona the year that the companions of Columbus returned from their first voyage. 3. The testimony of numerous Italian writers of the sixteenth century, among them Benedetti, Cunano, Gibini, Leoniceno, Montagnana, Torelli, Benivieni, Vigo, Mattioli, Fracastoro, Brassavola, Fallopio, not to mention others, who all proclaim the modern origin of the disease. Hence, it is, according to Barduzzi, impossible to deny the evident relationship existing between the appearance of syphilis in Europe, and especially in Italy, in 1493, and the return of the Portuguese boats of Columbus. Contrary to Sudhoff's and Sigerist's conclusions—both being believers in the ancient origin of syphilis in Europe—Barduzzi maintains that this opinion is not built upon a solid basis and offers no really serious proof that the disease existed either in antiquity or the medieval epoch before 1493.

Of great historical interest is the recent work of

K. Dohi, of Tokio, who has studied the historical aspects of syphilis in Europe and in the Orient—India, China and Japan—as well as the ancient medical literature of these countries. Leaving aside Dohi's remarks on the origin of European syphilis which are based on Procksch's and Bloch's writings—the earlier important writings of Professor Rollet, of Lyons, being probably unknown to Dohi since he does not refer to them—we would briefly consider what the Japanese writer has to say in respect of the discoveries and opinions emitted on the socalled syphilitic changes observed in skeletons belonging to the stone age. He refers to Adachi's discoveries of Japanese skulls and tibias belonging to this period, but with Minami and others, it must be admitted that these skeletal specimens are not convincing.

Dohi carefully studies the ancient Chinese physicians of the precolumbian period and refers to some more or less singular texts relating to leprosy, genital ulcers—perhaps ulcus molle, etc. Ancient Japanese medical literature is not more explicit and a manuscript studied by Scheub and Kayama—upon which much hope was founded—has proved not to be authentic. The same applies to India. In this country the word for syphilis is *phisango,* and this does not occur in any text prior to 1495. Here again, all proof is lacking that syphilis existed in the Orient before the return of the crews of Columbus from America to Spain.

There would seem to be some evidence that syphilis developed in India after 1498, with the crews of Vasco de Gama's fleet. In China it was just described by physicians about 1520. The disease probably was introduced via Canton before the arrival of the Portuguese in China, probably by that intermediary of Chinese coming from India or the Malaysia islands. Syphilis appears to have invaded Japan before 1543, by the intermediary of Japanese pirates who ravaged Malaysia seas and coasts of China, or by the inhabitants of the Lioukiou archipelago. But syphilis developed in Japan before the Portuguese came there.

Dohi also gives a good summary of the writings of the Chinese and Japanese physicians of the sixteenth century and shows that they were familiar with hereditary syphilis, not to mention the ordinary manifestations of the disease. The Japanese physicians belonging to the Chinese school, as well as those belonging to other schools, have left us many descriptions of syphilis, in many respects quite as exact as those given by European physicians of the epoch.

Antiquity of Syphilis.—It is generally stated that syphilis was imported in 1495 or 1496 by the sailors of Christopher Columbus on their return from Spain. Certain authors, however, within the last twenty years have opposed, with the aid of authoritative arguments, this opinion of the American origin of syphilis, which did not appear until a generation later, about 1535, and which they consider based upon faulty testimony, for commercial motives. In a communication that he made to the Congress of Medicine at London in 1913, Sudhoff declared himself to be a firm believer in the antiquity of the disease. *La France Médicale* has summarized as follows this learned communication:

In recent times, and also toward the close of the Middle Ages, prehistoric bone fragments were discovered apparently showing syphilitic lesions. But all the while certain experienced scientists, such as Lannelongue and Gangolphe, were not altogether convinced. Moreover, it is strange that only those bones found in the American tombs of the seventeenth and eighteenth centuries presented syphilitic lesions. This leads us to believe that it may have been the Europeans who carried syphilis to America. The troops of Charles VIII, perfectly disciplined, never gave themselves to any excesses and it is probable that the epidemic with which they were smitten was an epidemic of typhus. In all the socalled syphilized regions one recognizes the long existence of the disease; the popular speech, the municipal edicts, the therapeutic measures prove it. It was the malady of *mauvais boutons* treated as today by rubbing with mercurial ointment. It was already established in the works of the alchemists of the twelfth century that mercurial ointment was the treatment, and the manner of applying it, its therapeutic action and its special results such as salivation are described. The use of the mercurial rubbing enables us to distinguish leprosy from eczema and from syphilis, a constitutional disease. The Italian physicians of the twelfth and thirteenth centuries had begun to take up the problem, and in the thirteenth and fourteenth had communicated the results of their labors to their colleagues in the south of France. The alchemical medicine of Arnaud de Villeneuve bears witness to this.

It was known even in the fourteenth century that the sexual act was the usual avenue to syphilis, the *gros mal* of the courtesans of the south of France. The Italians, rendered furious by the invasion of Charles VIII, translated *gros mal* as *mal franzoso,* as an expression of their anger. The expression spread like wildfire. In Germany the disease came to be known as *Franzosenkrankheit,* French disease, and in certain cities free treatment was given sufferers in places known as *maisons françaises* by the people. This expression of *mal français* constitutes, according to Professor Sudhoff, a title of glory for the science of medicine in the south of France, which tore the veil away from the face of this insidious disease and taught the earliest prophylaxis and cure. —Translated from *Æsculape.*

The Earliest Medical Journals.—Dr. Leartus Connor states (*J. A. M. A.,* June 14, 1884) that the first medical journal was a Paris publication edited by Nicholas de Blegny. It appeared in 1679. The first medical journal published in this country was apparently a translation of the *Journal de Médecine Militaire* issued in Paris from 1782-88. It appeared in New York City in 1790. The first really American medical journal was a quarterly, *The Medical Repository,* published in New York from 1797-1824. The second American journal, the *Philadelphia Medical Museum,* was born in 1804 and lived only seven years. The *Baltimore Medical and Physical Recorder* was the third American journal, issued from 1808-09. Boston's first medical journal was the *New England Journal of Medicine and Surgery,* 1812-27. This quarterly was consolidated in 1828 with the *Boston Medical Intelligencer* to form the *Boston Medical and Surgical Journal,* still being published.

Editorial Articles

WHOLE MILK IN INFANT FEEDING

In infant feeding, as in the diet of adults, the object of modern medicine is to establish a form of diet which conforms most closely to that which is natural; in short, to work out a means of nutrition based on scientific principles. But again, as is the case with the food of adults, it is a difficult matter to lay down a diet table for infants which is at one and the same time scientific and nutritious.

For some time a discussion has been going on between the advocates of modified milk and whole milk for infants. Not long ago milk, modified in accordance with the results of laboratory experiments, was regarded, when mother's milk was not available, as the proper food for babies. More recently, however, a certain amount of scepticism seems to have arisen with respect to the advantages of modified milk, and it is being urged by some authorities that whole milk is better adapted for infant's consumption. Dr. Leonard Findlay, of Glasgow, is one of the leading supporters of this viewpoint and at a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine, London, on April 24, 1925, argued his case strongly.

In the first place he admitted the necessity for boiling milk owing to the fact that in Great Britain it was impossible to obtain a perfectly pure supply. He insisted that it was idle to attempt so to modify cow's milk that it resembled human milk in all its most valuable essentials, and pointed out that dilution of cow's milk opened up the danger that certain aminoacids, for instance, might be so reduced in quantity as to give rise to disturbances in growth, just as the dilution frequently practised so reduced the iron intake of an infant as to produce anemia. Dr. Findlay pays little heed to the argument that an infant is unable to digest whole milk, as certain metabolism experiments on marasmic infants had shown that such babies had no difficulty in dealing with cow's milk. Judging from his clinical experience a majority of children digested and thrived on whole cow's milk, excluding those in whom definite infections of the digestive tract were present. Findlay concluded that the differences between cow's milk and human milk were of so subtle and fundamental a character that it was futile to attempt to humanize cow's milk in such a manner that it constituted an efficient substitute. In his opinion, boiled whole milk gave better results than any form of modification in all save in the very youngest infants.

Dr. Hugh Thursfield supported the employment of boiled whole milk in infant feeding on purely clinical grounds. Dr. Eric Pritchard of London opened the case for the modification of cow's milk and based his contention upon the incontrovertible argument that except in a comparatively few instances breast milk is the best food for infants and failing this in his opinion the most efficient substitute was that which approximated in composition as closely as possible to breast milk. Moreover, Dr. Pritchard and Dr. Tewesbury pointed out that not only were best results to be expected from such a modification, but had been obtained at their hands.

Dr. Pritchard held that the problem was not the simple one of dealing with the protein, fat and carbohydrate so as to obtain these three elements in correct proportion, but the much more complicated one of adjusting the relative proportions of all the thirty different elements of milk, each of which played some part in metabolism. He laid most stress on the harmful effects of the excess protein contained in cow's milk which, in his opinion, was dangerous both for its immediate effects in leading to fermentation and the absorption of the toxic products of this process, and also for its remote effects, such as those produced in the liver and kidneys by the extra burden thrown upon them and those taking place in that "long suffering organ, the stomach," by the excessive acid production necessary for the digestion of cow's milk. Dr. Tewesbury also inveighed against the use of whole milk on account of its high protein content, stating that according to his view, the signs of indigestion manifested so frequently in infants were due to too much protein. In support of the good effects of modified milk he drew attention to the excellent results obtained by the simple modification of cow's milk along the lines introduced by Sir F. Truby King.

The outcome of this discussion tends to emphasize the need for breast feeding whenever available. There is no form of food for infants which is an absolutely efficient substitute for human milk. On the other hand, it must be taken into consideration that a substitute as good as possible must be found as so many mothers at the present time are either unable or unwilling to feed their babies themselves. While a large number of men of experience assume that boiled milk is as satisfactory a food for healthy babies as any artificial food, it must not be forgotten that in the large cities of today a large number of babies are not healthy and these must be dieted in the most effective way. And again the per-

sonal equation of the infant must be taken into account and, as Dr. H. C. Cameron remarked at the London meeting, artificial feeding is in the nature of "sighting shots" and the object of the physician should be to discover the best sighting shot. The arguments of Dr. Pritchard and Dr. Tewesbury that whole milk on account of its excess protein is likely to cause restlessness, sleeplessness, constipation, colic and flatulence cannot but carry weight.

This country may be termed virtually the home of modified milk feeding of infants and it would be instructive to learn the views of authorities here as to the respective merits of whole and modified milk for infant feeding.

LOSS OF HEAT AND WEIGHT IN NEWBORN BABIES

Papers or records of observations on newborn infants are comparatively rare in current medical literature, a neglect which is to be deplored as valuable facts may be gathered from a close investigation of a child shortly after birth. However, the care of the infant from every point of view is now receiving some of the attention which its importance deserves and useful knowledge is being accumulated. At a meeting of the Section of Obstetrics and Gynecology of the Royal Society of Medicine held in London on December 4, 1924, Professor Louise McIlroy read a paper on some observations upon the relationship between the loss of heat and loss of weight in the newborn. It was pointed out that the usual explanations that changes in the metabolism of the infant when adapting itself to neonatal conditions do not seem sufficient to explain the loss of weight in all cases. A series of observations were made upon infants who were wrapped in a warm blanket at birth, and subsequently cleansed daily with olive oil instead of soap and water.

The results were extremely satisfactory; there was less initial loss of weight in the first three days than in the controls or bathed babies, and the increase of weight was more appreciable during the rest of the infant's stay in hospital. The controls were taken at the same season of the year, same birth weights, and the same number in the family. Charts of temperature taken by rectum at birth, one to two hours after and after oiling were given and a drop of one to two degrees was found to be present in the majority of cases. Exposure to air during cleansing was shown to cause a loss of heat.

Professor McIlroy insisted that newborn babies should be kept as much as possible in one apartment with an even temperature, and bathing should be dispensed with for seven or eight days after birth. The infants are sweet and clean after oil has been used as it is wiped off after the daily cleansing. In the treatment of infants suffering from shock at birth according to McIlroy it was found that better results are obtained by warmth and rest and the avoidance of baths or artificial respiration.

The respiratory passages should be cleared of mucus by a rubber tube and stimulants given, such as pituitrin two minims hypodermically, or strychnine. Gentle massage of the heart is sometimes helpful.

Infant mortality during the first year of life, although it has been decreased considerably by means of the intelligent care of the mother during pregnancy, and the more scientific care of the child immediately and soon after birth, is still higher by far than it should be. Among the poorer classes scientific material and infant care are greatly lacking and in the saving of infant life there is scope for much progress. It is encouraging to know that Professor McIlroy and teachers of her type are alive to the exigencies of the situation and are striving successfully for reform in this direction.

PERAMBULATING OIL TANKS

"As a fat body is more subject to disease, so are rich men to absurdities and fooleries." So wrote Robert Burton three centuries ago, though we seem to be just learning that superfluous collections of body grease are not conducive either to health or longevity. Burton might have played upon the second of his phrases and pointed out the absurdity and foolery of making unnecessary additions to wealth of body weight.

Just what body weight should be is an unanswered question and often an important one for the physician. After a wild search for standards of nutrition in children in which a score or more have been given a thorough trial, it has been at least proved that there is no hard and fast rule, unless it be that of steady and proportionate gain in height and weight under conditions which are known to favor normal growth.

Hunger in healthy children is a thoroughly normal and harmless thing except where they have access to those unnatural man made foods consisting chiefly of sugar. Hunger is, however, something rare in the civilized adult, but is replaced by the æsthetic business of eating for pleasure. One of three things usually results; either excess food is stored up; the tissues are bathed with unusable materials of all sorts; or there is indigestion. Of the three it is hard to say which is worst for the organism.

Beyond middle life there are no standards whatsoever for body weight. The usual weight for height in the previous decade of more active life, when the person believed himself in best health, might seem a safe guide. However, women especially at this

time tend to lay on extra weight. Is a certain amount of this normal, or is it all the result of the continued enjoyment of the table with a diminished bodily metabolism connected with changed sexual characteristics? How far can weight reduction in such persons go and not be harmful?

Feeding is such an important business in life for most people that their feelings as to their condition for work and for enjoyment of life are likely to be tinged by, and subordinated to, their relish for good food. Of course, if this enjoyment of superfluous food has become the end and aim of life, there is no other subjective test of health and the use of the scales as a rough guide is a last resort.

To the operations which have been suggested for prolonging life or rejuvenating it we would like to suggest that a Pawlow fistula might be much more useful for many persons than the substitution of new glands for old or the removal of the large intestine. The proud possessor of an alimentary canal with a trapdoor at the proper location could then devote his energies much more devotedly to feeding and would be saved additional years of life by avoiding diabetes and the other ills that seem attendant on corpulency.

MOST RECENT VIEWS OF SCARLET FEVER

Klein in 1887 was the first to suggest that scarlet fever is of a streptococcal origin. Since which time there has been a tendency to discredit this suggestion and to consider that streptococci are merely secondary invaders, arguing that streptococci are not found in the blood during the early stage even in toxic cases which represent the purest form of the disease. Consequently the improvement sometimes following the use of antistreptococcic serum was ascribed to its action on a secondary infection.

The recent work of G. F. and G. H. Dick tends to confirm the views of Klein in that their investigations point to the conclusion that scarlet fever is a local infection of the throat caused by a particular type of Streptococcus hemolyticus capable of producing a soluble toxin, absorption of which causes the usual manifestations of the disease. The Dicks have devised a test, termed the Dick test, by means of which they assert that the susceptibility of the subject to scarlet fever may be determined. The Dicks' observations have been confirmed by Zingher, Dochez and Blake, Trask and Lynch and treatment along these lines has been instituted. The Dicks have prepared a toxin for active immunization to the disease as well as a scarlatinal antitoxin, while Dochez has prepared an antiscarlatinal serum.

Naturally, there has arisen a demand for these new biological agents and in the *Boston Medical and Surgical Journal,* January 8, 1925, is a communication from Eugene R. Kelley, Commissioner of Health for Massachusetts, discussing the question and issuing a statement of his department's policy with regard to this subject.

While acknowledging the inestimable value of the investigations of Dochez and the Dicks, and while fully realizing that if by further investigations the results reached by them are substantiated they may prove to be the means for controlling scarlet fever, Eugene R. Kelley and his colleagues feel that these measures are still in the investigative stage and should be so held for some time. It is argued by them that from a theoretical point of view further confirmation is needed of the specific etiological rôle of streptococci in scarlet fever. From both theoretical and practical viewpoints further evidence is needed that the socalled toxin produced by scarlatinal streptococci is the specific poison of scarlet fever, that Dicks' toxin produces active immunity to the disease and that the Dick antitoxin and the antiscarlatinal serum of Dochez are agents of curative value. It is pointed out that the available reports on the use of these procedures and agents, promising as they appear to be, are still meagre. Until further confirmation of the accuracy and dependability of the test is forthcoming and until the moot points with regard to the toxin injections and serums have been more fully elucidated and the preparation of these products has been standardized by Federal regulation, the Massachusetts Department of Health feel that the time has not come to make definite statements on the subject or to take part in popularizing the use of the test or the protective and antiscarlatinal agents mentioned above. In this connection allusion may be made to the work of Di Cristina of Palermo and Caronia of Rome, who state that they have obtained cultures of anaerobic organisms in the shape of minute diplococci from the blood, bone marrow, spleen, nasopharyngeal secretion, cerebrospinal fluid and urine during the eruptive period and early stage of desquamation and which they state are the causal agents of scarlet fever.

It may be said that as far as the Dicks' test is concerned that the results are encouraging, but as regards the method of active immunization by subcutaneous injection of a small amount of the toxic filtrate of the variety of Streptococcus hemolyticus that causes scarlet fever, it may be premised that further investigations are needed to show the duration of the immunity conferred. Perhaps it would not be too much to say that the specific immunization to scarlet fever is as yet largely in the experimental stage. Attention may be drawn to the fact that the treatment of malignant and septic cases by intramuscular injection of whole blood or serum

was carried out several years ago on a limited scale by Zingher and more recently by Weaver, with encouraging results. It is gratifying to note that in the efforts to run to earth the causative organism of scarlet fever American investigators have been in the van and it really seems that the solution and effective immunization and antibacterial treatment will take place in the near future. It is best, perhaps, not to prejudice the chances of a complete victory by premature action.

DAILY DOZENS

The comparatively early demise of the author or namer of a set of daily exercises may not be in the least significant that those exercises are not beneficial, but it does signify that it takes something more than muscular exercise to keep one in health and to prolong life.

Muscular activity was evolved for the end of getting us about for the purpose of securing food and escaping other seekers after food of a carnivorous inclination. Of late its chief purpose would seem to be the diametrically opposite business of getting rid of excess food which we have stored up in the way of fat. If not to this end, it is supposed to answer in every other way as a promoter of well being.

These sets of prescribed exercises are practically identical, for there are no new bodily movements under the sun, though the name on the prescription makes them seem new and different. There may be considerable difference, however, in how they are done, and it is this feature that each new adviser of such exercises emphasizes.

Exercise is one of the means of maintaining the body in health, but it is only one of the means and it is far from being primary. As John Burroughs said, "We should not forget that we are built about a gut," and, practically, we do not forget this, for the end and aim of most people is centred about catering to this gut. Unfortunately they cater to it entirely beyond its desires or deserts, and, in consequence, they try to make up for this excess by going in for muscular exercise. The futility of this is well illustrated by fact that the daily dozen of popular exercises uses up, according to a laboratory investigation, only so much energy as is contained in a small lump of sugar, while it is likely to create an appetite for many such lumps.

The appeal to exercise as the chief or only source of health is not confined to the individual. Dr. John Sundwall has vigorously pointed out that "One of our outstanding delusions is that which proclaims play, which is so often overstimulated, and competitive athletics, which are so often overtaxing, as constructive health measures. An example of this widespread and dominating phantasm is seen in the following incident. After the World War, owing to the astoundingly poor showing of our draftees in the physical examinations . . . a conference was called at Washington by the Secretary of War, the Secretary of the Navy, the Commissioner of Education, etc., for the purpose of initiating measures whereby the physical regeneration of America would be accomplished. The result was the organization of another athletic association." In fact, physical education has been proclaimed by a host of advocates as the cureall for the various defects of present day man.

Unfortunately, many of these well meaning persons see in physical education only exercise and not the wise use of all the means of bringing about health beginning with the prenatal history of the child.

THE CAUSE OF CANCER

The announcement in the *Lancet*, July 15, 1925, that the cancer germ has been isolated has aroused intense interest in medical and scientific circles and has inspired the hope in the members of the community at large that the conquest of the disease may be in sight at last.

The workers who have perhaps achieved this triumph are Dr. William E. Gye and J. E. Barnard, F.R.S., of the English National Institute of Medical Research. Dr. Gye, Mr. Barnard and coworkers it is said have been able to isolate an organism from that type of cancer known as chicken sarcoma, completing the brilliant research work of Dr. Peyton Rous in the Rockefeller Institute, New York. One of the outstanding features of the series of investigations in London is that the discovery was rendered possible only by the use of what is termed the ultramicroscope devised or improved by Mr. J. E. Barnard, a layman.

The germ isolated is a filterable virus of the poliomyelitis and foot and mouth disease type. As the *Lancet* pointed out, this improved microscope opens a field of almost illimitable possibilities as far as the discovery of disease is concerned. Minute viruses are the causes, or are exciting causes of many maladies. However, it would be premature to enter into a discussion of the subject until more details are known.

In the meantime, it may be said that undoubtedly a step in advance has been made. If Dr. Gye's results are confirmed by independent workers, and it is proved that cancer is caused by a germ, it will be not only a discovery of the first importance, but can be put into practical effect in the prevention of the disease.

BRITISH CONGRESS OF OBSTETRICS AND GYNECOLOGY

Among those present were Professor J. Whitridge Williams, of Baltimore, who opened the general discussion. Professor Williams said that it was now the universal belief that puerperal sepsis was a contact infection, and it would be a misfortune if that view were abandoned. He had taught for a long time that the worst thing that could be done was to interfere with the interior of an infected woman's uterus. When one encountered a severe case of puerperal infection, antistreptococcus serum seemed to be of no avail. Therefore, all that could be done was to try to find some means of combating it.

Two thirds of the patients with the thrombophlebitic form of pyemia would die if left alone, and if operated on they would probably all die. The less severe cases which did not come into these categories would recover if left alone, because the outcome depended on the degree of resistance of the patient and on the violence of the causative bacteria. Vigorous measures applied to these milder forms might convert a condition which was likely to recover into one which might be fatal. There was need for research, not purely obstetrical, but along the general lines of bacteriotoxic methods. The general sense of the meeting was that the hope of combating successful puerperal sepsis lay in preventive measures, such as the provision of better housing, antenatal care and so on.

Dr. T. Watts Eden pointed out that the profession had scarcely yet begun the systematic study of puerperal infection; it had not even settled whether, for the most part, the infection was intrinsic or extrinsic. Nor was the real significance of streptococci in the vagina known. Until hospitals provided special accommodation for puerperal sepsis cases, so that they could be investigated from beginning to end, there would not be much progress in the matter. There must first be real assistance from the government. On the suggestion of Dr. Fletcher Shaw, he proposed that a memorial be sent from the Congress to the Ministry of Health, urging the provision of hospital accommodation for the care and investigation of these cases.

INDUSTRIAL MORBIDITY STATISTICS

Since the problem of industrial morbidity is of the greatest interest and importance to industrial management, to physicians engaged in industrial work, to statisticians and to insurance companies, the statistics of industrial morbidity, and their extent and relationship to the industrial life of the world, have held the attention of investigators for the past several years. Some of these investigations have shown that few attempts are made by industrial medical departments to keep statistics of their morbidity experience, and that those that are kept have no common basis for comparison. The lack of adequate knowledge of the problem was further intensified by the efforts of different organizations to find some measure for it, but without success.

In order to stimulate cooperative interest in this work and to bring about some definite action on the matter, the National Industrial Conference Board invited a group of physicians and statisticians who were representative of organizations interested and who were themselves interested in the subject, to meet and consider the problem. At its first meeting this committee discussed the need for a standardized classification of industrial morbidity brief enough to commend it to busy industrial medical departments, but sufficiently comprehensive to provide proper measure of sickness experience in industry. It was felt that none of the classifications already devised by individual plants met the needs of all plants, and it was decided that a classification should be developed based on the International List of Causes of Death, third revision.

A technical subcommittee made up of expert statisticians was appointed to prepare an abridged classification. This was presented later to the committee as a whole and adopted. It was felt that the work of the committee should be placed under the sponsorship of some interested organization that could supply a permanent centre from which the work could be distributed. This the U. S. Public Health Service agreed to do.

The committee feels that it has made at least a beginning upon a work of great importance both to industry and to the community at large. If this classification which it has devised is carefully used in recording sickness experience, it will give a fair indication of the extent of disability from sickness in any given industry.

HEALTH OF CHILDREN IN INDUSTRY

Of 922 defects recorded in 412 children under sixteen regularly employed, 260, or twenty-eight per cent., were considered to accentuated by some condition of the occupation, according to a recent issue of the *Bulletin* of the New York State Department of Labor. Approximately one fifth of the children had serious visual defects, and only a seventh of these cases had been adequately corrected with glasses. Dental defects requiring immediate treatment were found in approximately one third, and 12.8 per cent. had hypertrophied tonsils, four per cent. heart affections, one per cent. symptoms suggestive of early tuberculosis, approximately one fourth had flatfoot to some extent, and only forty-five per cent. had normal posture.

Of the 412 children examined, only eighteen had no physical defects, ninety-nine had minor defects requiring hygienic regulation and diet, 179 had moderate defects requiring minor medical attention, ninety-three had more serious conditions causing temporary or partial incapacity but capable of cure by proper treatment, sixteen had organic diseases or physical impairment capable of mitigation, and seven had such serious organic lesions as to require immediate treatment and probable cessation from work.

The Physicians' Home—The First Medical Hearthstone in America

In Caneadea, New York, at an altitude of two thousand feet, far above the scenes of turmoil, we find the first unit of the Physicians' Home. The Physicians' Home is an institution, the ideal of which is to render service to those who through the years have been faithful to a suffering, though sometimes unappreciative public.

The scope of the institution is national and as it grows it will care for old and infirm members of the medical profession of any recognized school of medicine of any state. Their wives and widows also will be accepted as guests, and everything possible is done to preserve the home atmosphere.

The staff of the home is headed by a matron who serves the guests with the same spirit of love and fidelity that we find in a mother for her children. There is no institutional atmosphere about this home. It is a real home for physicians and surgeons who have been honorable in their conduct and yet have fallen victims to the common foes, poverty or broken health.

PHYSICIANS' HOME, CANEADEA, N. Y.

The home is near the banks of the Genesee River in Central Western New York and is surrounded by an area noted for its scenic beauty. It consists of a fertile farm of one hundred and eighty-six acres, the gift of Dr. Stephen V. Mountain, of Olean, N. Y., as a memorial to his father.

The home is sponsored by and has the unanimous endorsement of the American Medical Association and the New York State Medical Society. It is under the jurisdiction of the New York State Board of Charities, from which it derives its charter. It is officered by such well known men as Robert T. Morris, Silas F. Hallock, Ralph Waldo, Warren Coleman, Max Einhorn, Albert G. Weed, W. Freudenthal, Richard J. Kevin and others. It derives support from the voluntary contributions of the medical profession of the United States and kindly disposed laymen who are interested.

There are well filled barns and silos which provide food for a herd of thirty-five Holstein cattle and two hundred fowl. Pure water is piped directly from the mountain springs in the near vicinity. The house is a commodious structure of twenty-eight rooms, modern in every sense, having its own electric lighting plant, steam heating system, modern plumbing facilities on all floors; it is well and comfortably furnished and has two assembly rooms in which are a piano, victrolas, and the ever popular radio.

The physical welfare of its guests is met by well ventilated bedrooms and baths, running hot and cold water, two large airy drawing rooms and verandas. The home even maintains a medical clinic under the supervision of a competent physician. One who expects to find the usual institutional atmosphere with rules and regulations, restrictions and the like, will be agreeably surprised to find them conspicuous by their absence. Instead you will find a well regulated, contented family of intellectual men and women whose only restrictions are a selfimposed regard for the comfort of each other shown in the spirit of helpfulness that amounts almost to rivalry.

There you will find good old fashioned meals, with plenty of fresh milk and eggs. One may ramble over beautiful meadows and woodland and visit the inland lakes and forests. There are fishing and hunting. The State park is nearby where the chiefs of the Six Nations once held their council seat.

The open hospitality of the place is apparent. You are cordially invited to visit the institution, and the men and women who are there will be glad to see you and when you go away you will be carrying with you the message of one of the most worthy charitable works being done by the medical profession in this country.

The guests at the Physicians' Home might be thoughtlessly and carelessly called failures, but they are not failures; they are successes. They are the men and women in the profession who were in honorable standing but who have met the reverses which so often leave them dependent upon others. No one can measure how much these men and women have contributed to humanity—the broken men and women with crushed hopes, who never reached the goal.

George Fillmore Swain, professor of engineering at Harvard, tells his young men that "the young engineer may always learn more from the study of failures than from the study of successes."

And so we find these men and women have contributed to human progress and their contribution should not be overlooked—neither should their welfare be neglected. You can not take the old family doctor, the stouthearted old surgeon, or the palsied professor and throw him into the discard—the almshouse. Such action would make perhaps the most pitiful picture in life—that of a man who has outlived his friends and relatives and for whom no one cares.

There is no place like or similar to this home where they can go and feel that they are not dependent. Here they are in their own homes, main-

tained by their fellow physicians and surrounded by men of the same intellectual and mental achievement.

The Physicians' Home has taken care of upwards of thirty of such men and applications are continually being made to have the service increased. It is evident from what has been said that the Physicians' Home has been a successful project up to and within the means thus far available. It will be obvious to you that much remains to be accomplished. We must not fail. The duty is yours and ours. The need is urgent.

Any person is eligible to a contributing membership which costs but $10.00 per year—$100.00 constituting a sustaining membership, paid but once. Many will hear and heed this call from a motive of philanthropy. Others will not be unmindful of the possible protection vouchsafed their wives and widows or themselves when considered in the light of insurance against a possible adverse turn of the wheel of fortune.

Please stop a moment, doctor, and think this over, for if every physician in this country were to know what the officers of the Physicians' Home know, this institution would have their support promptly and not only for this home but for other units of the home in different parts of the United States.

We ask you to do two things. Assist your county society to complete a successful organization for the support of the home, and send your check for as generous an amount as your heart and ability may dictate.

It is requested that physicians remember this practical and altruistic charity in their testamentary devices and it is also suggested that they lay it before their friends and patients.

All communications should be made to Silas F. Hallock, M.D., 901 Lexington Avenue, New York city, Secretary of the Board.

News Items.

Infantile Paralysis Epidemic.—Health authorities in Jersey City, New Jersey, express alarm over the prevalence of infantile paralysis in the city during the last few weeks. Seven infants are now in the contagious disease hospital, the largest number since 1916.

Smallpox in Chicago.—Dr. Herman N. Bundesen, commissioner of health of Chicago, has announced that the smallpox situation there is more serious than at any time since 1905, and has asked for an appropriation of $25,000 for combating the disease.

Fellowships in Plastic Surgery.—The General Education Board has provided funds for two fellowships in plastic surgery, each of three years' tenure, at Johns Hopkins Hospital. The fellowships are open to doctors of medicine and provide for research and laboratory work.

Postgraduate Courses in Gastroenterology at Columbia.—The second section of the courses in gastroenterology, which are being given at Columbia by Dr. John L. Kantor will be held from August 3d to 21st, for the preliminary work, and from August 22d to September 2d, for the practical course. Application should be made to the Dean of the School of Medicine.

Wayside Eating Establishments.—Dr. Matthias Nicoll, Jr., commissioner of health of New York State, has made an appeal to health officers of towns and villages in whose jurisdiction are located wayside eating places and rest rooms patronized by automobile parties, to inspect sanitary conditions at frequent intervals. The state department has received many reports of bad sanitary conditions in such places, but does not feel it can itself carry on such inspections.

International Child Welfare Congress.—A conference to discuss problems of child welfare will be held in Geneva, August 24th to 28th, under the auspices of the Swiss Government.

International Postgraduate Courses in Berlin.—The Faculty of Medicine of Berlin University announce several postgraduate courses beginning in October, one of them being for oculists. Details may be obtained from International Postgraduate Courses, Luisenplatz 2-4, Berlin NW6.

New Veterans' Bureau Hospital.—A tract of five hundred acres of land near Northport, Long Island, has been acquired by the U. S. Government, on which will be built a thousand bed hospital for psychiatric patients of the New York district. The cost is estimated at between two and three million dollars.

Civil Service Examinations.—Examinations for entrance into the regular corps of the U. S. Public Health Service will be held September 14th, at Washington, Chicago, New Orleans and San Francisco. Candidates must be medical graduates. Information may be obtained from the Surgeon General, U. S. Public Health Service, Washington, D. C.

Prize Thesis in Surgery.—A prize for a thesis in surgery, to be awarded every other year at the University of Virginia, has been established by Dr. John Shelton Horsley, of Richmond. The prize amounts to about one thousand dollars, and graduates of the medical department of the university, of not more than fifteen years' standing, are eligible. The first award is next June, and theses should be addressed to the dean not later than February first.

Relics for New York University.—In memory of Dr. Frank Ridgway, her father, Miss Sally Ridgway has presented to New York University a flag used as a marker to direct people to hospital tents at the battles of Gettysburg, Chancellorsville, and Spottsylvania, and a case of surgical instruments used in those battles. Doctor Ridgway was a student at the University at the time of the Civil War, but left to volunteer for service.

Personal.—Dr. Dean Lewis, of Chicago, has accepted the chair of surgery at Johns Hopkins University Medical School. A banquet in his honor was recently held in Chicago.

Dr. Robert T. Miller, of Johns Hopkins University, Dr. George C. Sears, of Harvard University, and Dr. Edwin St. J. Ward, of the American University, Beirut, have been honored by the degree of doctors of science, by Amherst College.

Dr. Samuel J. Crumbine, formerly dean of the Kansas School of Medicine, has been appointed general director of the American Child Health Association.

Dr. Lewis J. Friedman has moved his office to 315 East Eighteenth Street, New York.

Dr. Henry F. Mace of Walton, New York, has been appointed assistant medical inspector for rural schools, of the state department of education. He succeeds Dr. Willard T. Rivenburg, who recently resigned.

Dr. Hubert Work, secretary of the interior, and former president of the American Medical Association, has received the degree of doctor of laws from the University of Colorado.

Dr. John S. Davis, of Johns Hopkins Hospital, has received the honorary degree of Master of Arts at Yale.

Dr. Charles N. Meader, dean of the University of Colorado School of Medicine, has resigned to enter private practice; he will, however, continue as dean emeritus, and head of the department of medicine. Dr. Maurice H. Rees, assistant dean, has been appointed to the vacancy.

Dr. and Mrs. Homer H. Wheeler, of Indianapolis, have donated a large plot of ground to the city for a park.

Prof. Albert A. Michelson, head of the department of physics of the University of Chicago, has been appointed to the first of the Distinguished Service Fellowships established by a fund given by Martin A. Ryerson, donor of the Ryerson Physical Laboratory.

Dr. Walter E. Garrey of Tulane University Medical School is to hold the chair of physiology at Vanderbilt University, Nashville, beginning in the fall.

Dr. David E. Hoag, of New York, a regularly commissioned officer in the Medical Reserve Corps, U. S. Army, who was ordered to active duty, by the War Department, for a period of intensive training, and who has been serving with the 245th Coast Artillery, stationed at Fort Wright, Fisher's Island. N. Y., has returned to New York and resumed his practice.

Endowment for Johns Hopkins.—An endowment of $1,500,000 for the Johns Hopkins' Children's Fund will be sought for beginning in the fall. The fund is for the care of sick and needy children of Baltimore. Part of the $80,000 a year devoted to the care of needy children by the Hospital, has come from a gift of $700,000 from the General Educational Board, which, however, must be used as a building fund and will no longer be available.

Rockefeller Institute Appointments:—The Board of Scientific Directors of The Rockefeller Institute for Medical Research announces the following appointments and promotions:

New Appointments: *Members,* Dr. Winthrop J. V. Osterhout and Dr. Florence R. Sabin.

Associates, Dr. Robert T. Hance, Dr. Marian Irwin. *Assistants,* Dr. Lawrence W. Bass, Dr. William W. Beattie, Dr. Francis H. Case, Mr. William C. Cooper, Jr., Dr. Charles A. Doan, Dr. Philip Finkle, Mr. Earl S. Harris, Dr. Charles H. Hitchcock, Dr. Philip Levine, Dr. Richmond L. Moore, Dr. Ralph S. Muckenfuss, Dr. Richard E. Shope, and Dr. Hans Theiler.

Fellow, Dr. Telémaco S. Battistini.

Promotions: *Fellow to Assistant,* Dr. David Davidson, Dr. Philip Reichert.

Dr. Laura Florence, hitherto an associate in the Department of Animal Pathology, has accepted an appointment as assistant professor of histology and embryology at the New York Homeopathic Medical College and Flower Hospital.

Dr. Stuart Mudd, hitherto an associate in pathology and bacteriology, has accepted an appointment as assistant professor of experimental pathology at the Medical School of the University of Pennsylvania, and as associate in pathology at the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis.

Dr. Christopher H. Andrewes, hitherto an assistant in the Department of the Hospital, has accepted an appointment as assistant to Professor Francis R. Fraser, Medical Unit, St. Bartholomew's Hospital, London, England.

Dr. Douglas Boyd, hitherto an assistant in the Department of the Hospital, has accepted an appointment as assistant resident in surgery at Lakeside Hospital, Western Reserve University, Cleveland, Ohio.

Dr. Arnold M. Collins, hitherto an assistant in Pathology and Bacteriology, has accepted an appointment on the chemical research staff of the E. I. du Pont de Nemours Company, Wilmington, Delaware.

Dr. Robert Elman, hitherto an assistant in pathology and bacteriology, has accepted an appointment as assistant in Surgery, Department of Surgery, Washington University Medical School, St. Louis, Missouri.

Dr. Joseph H. B. Grant, hitherto an assistant in pathology and bacteriology, has accepted an appointment as house officer in pediatrics at Johns Hopkins Hospital.

Dr. C. Philip Miller, Jr., hitherto an assistant in pathology and bacteriology, has accepted an appointment as assistant professor of medicine in the Graduate School of Medicine of the University of Chicago.

Dr. Waro Nakahara, hitherto an assistant in biophysics, has accepted an appointment as associate pathologist at the Government Institute for Infectious Diseases, Tokio Imperial University, and research associate at the Institute of Physical and Chemical Research of Tokio.

Dr. Everett S. Sanderson, hitherto an assistant in the Department of Animal Pathology, has accepted an appointment as assistant professor of bacteriology in the Medical School of the University of Virginia.

Dr. David T. Smith, hitherto an assistant in pathology and bacteriology, has accepted an appointment as pathologist at the New York State Hospital for Incipient Tuberculosis, Ray Brook, New York.

Dr. Elmer L. Straub, hitherto an assistant in pathology and bacteriology, has accepted an appointment as assistant resident pathologist at the University of Louisville, Kentucky.

Dr. Chester M. Van Allen, hitherto an assistant in pathology and bacteriology, has accepted an appointment as assistant professor of surgery in the Graduate School of Medicine of the University of Chicago.

NEW OFFICERS OF STATE SOCIETIES

At the recent annual meetings of the various state medical associations, the following officers were elected:

Connecticut State Medical Society.—Dr. Robert C. White, Willimantic, president; Drs. Ernest R. Kelsey, Winsted, and Charles T. LaMoure, Mansfield Depot, vice-presidents; Dr. Charles W. Comfort, Jr., 27 Elm Street, New Haven, secretary, and Dr. Phineas H. Ingalls, Hartford, treasurer.

Florida Medical Association.—Dr. John S. McEwan, Orlando, president; Drs. Henry Mason Smith, Tampa; Carl A. Williams, St. Petersburg, and John A. Simmons, Miami, vice-presidents, and Dr. Shaler A. Richardson, Jacksonville, secretary-treasurer and editor of the journal.

Medical Association of Georgia.—Dr. Frank K. Boland, Atlanta, president; Drs. William R. Dancy, Savannah, and Henry M. Fullilove, Athens, vice-presidents, and Dr. Allen H. Bunce, Atlanta, secretary-treasurer.

Iowa State Medical Society.—Dr. Smith A. Spilman, Ottumwa, president; Dr. Thomas E. Powers, Clarinda, president-elect; Drs. Frank C. Mehler, New London, and Frederick F. Murray, Cedar Rapids, vice-presidents; Dr. Tom B. Throckmorton, Des Moines, secretary, and Dr. Addison C. Page, Des Moines, treasurer.

Kansas Medical Society.—President, Dr. Francis A. Carmichael, Osawatomie; vice-presidents, Drs. Benjamin F. Morgan, Clay Center; Joseph E. Hawley, Burr Oak, and Francis H. Smith, Goodland; treasurer, Dr. George M. Gray, Kansas City.

Massachusetts Medical Society.—President, Dr. James S. Stone, Boston; vice-president, Dr. Michael F. Fallon, Worcester; secretary, Dr. Walter L. Burrage, Brookline; treasurer, Dr. Arthur K. Stone, Framingham Center; orator, Dr. Charles F. Painter, Newton, and librarian emeritus, Edwin H. Brigham, Wellesley Hills.

Minnesota State Medical Association.—Dr. Herman M. Johnson, Dawson, president; Drs. William F. Braasch, Rochester; Arthur N. Collins, Duluth, and Eugene G. McKeown, Pipestone, vice-presidents; Dr. Edward A. Meyerding, St. Paul, secretary, and Dr. Earle R. Hare, Minneapolis, treasurer.

Mississippi State Medical Association.—Dr. Giles S. Bryan, Amory, president; Drs. Franklin G. Riley, Meridian, and Oscar N. Arrington, Brookhaven, vice-presidents; Dr. Thomas M. Dye, Clarksdale, secretary, and Dr. James M. Buchanan, Meridian, treasurer.

Montana Medical Society.—Dr. Charles F. Watkins, Billings, president; Dr. Fred F. Attix, Lewistown, president-elect; Dr. Ernest D. Hitchcock, Great Falls, vice-president, and Dr. Elmer G. Balsam, secretary-treasurer, re-elected.

New Hampshire Medical Association.—Dr. Thomas W. Luce, Portsmouth, president; Dr. John H. Gleason, Manchester, vice-president, and Dr. Dennis E. Sullivan, Concord, secretary-treasurer. The house of delegates created the new office of corresponding secretary. The next annual meeting will be at Concord.

New Jersey State Medical Society.—Dr. Lucius F. Donohoe, Bayonne, president; Drs. James S. Green, Elizabeth; Walter P. Conaway, Atlantic City, and Ephraim R. Mulford, Burlington, vice-presidents; Dr. Elias J. Marsh, Paterson, treasurer; Dr. John Bennett Morrison, Newark, recording secretary; and Dr. William J. Carington, Atlantic City, corresponding secretary.

New Mexico Medical Society.—Dr. Charles F. Beeson, Roswell, president; Dr. Harry M. Smith, Las Vegas, vice-president, and Dr. Charles M. Yater, Roswell, secretary-treasurer.

Medical Society of the State of New York.—President, Dr. Nathan B. Van Etten, Bronx County; first vice-president, Dr. W. H. Ross, Brentwood, Long Island; second vice-president, Dr. F. H. Flaherty, Syracuse, N. Y.; speaker, Dr. E. E. Harris, New York County; vice-speaker, Dr. G. M. Fisher, Utica, N. Y.; secretary, Dr. Daniel S. Dougherty, New York County; assistant secretary, Dr. H. G. Myers, New York County; treasurer, Dr. C. G. Heyd, New York County; assistant treasurer, Dr. James Pedersen, New York County; editor of the *Journal,* Dr. Orrin S. Wightman, New York County.

Medical Society of the State of North Carolina.—Dr. William DeB. MacNider, Chapel Hill, president, and Dr. Lewis B. McBrayer, Southern Pines, secretary-treasurer.

North Dakota State Medical Association.—Dr. John H. Rindlaub, Fargo, president; Dr. N. Oliver Ramstad, Bismarck, president-elect; Drs. Thomas Mulligan, Grand Forks, and William F. Sihler, Devils Lake, vice-presidents; Dr. Archibald J. McCannel, Minot, secretary, and Dr. William W. Wood, Jamestown, treasurer.

Ohio State Medical Association.—Dr. Leora G. Bowers, Dayton, president-elect; Dr. Clarence D. Selby, Toledo, was installed as president; Dr. Herbert M. Platter, Columbus, re-elected treasurer, and Dr. Sylvester J. Goodman, Columbus, re-elected secretary of the council.

Rhode Island Medical Society.—Dr. Halsey DeWolfe, president; Drs. Herbert G. Partridge, Providence, and Norman M. MacLeod, Newport, vice-presidents; Dr. Jesse E. Mowry, Providence, treasurer, and Dr. James W. Leech, Providence, secretary.

South Dakota State Medical Association.—Dr. William R. Ball, Mitchell, president; Drs. Theodore F. Riggs, Pierre, Silas M. Hohf, Yankton, and Nelson K. Hopkins, Arlington, vice-presidents, and Dr. John F. D. Cook, Langford, secretary-treasurer.

West Virginia State Medical Association.—Dr. James R. Bloss, Huntington, president; Drs. Richard O. Rogers, Bluefield, Henry C. Skaggs, Montgomery, and Delivan A. MacGregor, Wheeling, vice-presidents; Dr. Hugh G. Nicholson, Charleston, treasurer, and Sterrett O. Neale, Charleston, executive secretary.

Book Reviews

AN ANTHOLOGY OF PEDIATRICS

Pediatrics of the Past. An Anthology Compiled and Edited by John Ruhräh, M.D., With a foreword by Fielding H. Garrison, M.D. With Fifty-four Text Illustrations and Eighteen Full Page Plates. New York: Paul B. Hoeber, 1925.

This beautiful piece of work is a contribution to historical medicine as well as to the special field of pediatrics.

In compiling an anthology a great responsibility confronts the author. He must use his judgment in the selection of the outstanding representatives of the field he endeavors to cover and he must carefully select the salient points of their work so they may be briefly yet correctly appraised. Ruhräh has fulfilled these requirements in an admirable fashion. He has intuitively or consciously so balanced his work so as to give a survey of the vast field of the high spots in the development of the literature of pediatrics from antiquity to modern times in a comprehensive single volume. This is a special art; an art of a singular nature; a musician selecting a well balanced program, interpreted in a most masterly way.

We start our pediatric pilgrimage with the venerable Hippocrates and continue through a list of the ancients to the Arabians, stopping for a feast with Metlinger and finding for the first time perhaps that men like Sydenham, Francis Sylvius, Benjamin Rush, and others more famous for other achievements, had made many salient observations in the realm of pediatrics. The early American and English pediatric publications receive special attention.

There is too much ground covered to give even an inkling in this review. As the author indicates the book may be used to augment or rather supplement Garrison's work on the *History of Pediatrics,* but it also is quite admirable on its own and makes interesting reading.

Of importance is the translated *Grundlage* of Meissner appearing for the first time in English which gives a most complete pediatric incunabula. The entire book is carefully printed and the reproductions are excellent.

PEDIATRICS

Practice of Pediatrics. By Charles Gilmore Kerley, M.D., and Gaylord Willis Graves, M.D. Third edition, revised and reset. With 150 illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 922.

This volume is replete with practical detail and should prove a great help, not only to the general practitioner but to the specialist, and as a quick reference book as well. The subject matter is extremely well presented in appropriate chapters and the reviewer gains the impression that the author is deliberately avoiding hypothetical discussions to recount his own vast personal experience.

In this respect the volume is refreshing in that it is the author's own experience, his own observation and not in any part the views and experiences of other men, as is the case with many books of this kind. We may not always agree with the author, particularly in his well written chapter on infant feeding, in his use of lime water and top milk formulæ, and his theory of the influence on the infant's digestion of the casein in cow's milk, but the presentation with details of formulæ for varying conditions is so thoroughly practical that to the general practitioner at least, who is always ready to receive practical help based on experience, it more than compensates for the difference of opinion that may exist among specialists.

His chapter, with röntgenographic studies, on mechanical defects as a causative factor in gastroenterological disorders of older children, deserves special mention, in that it is a new field of endeavor in infant studies, with great possibilities for therapeutic results.

FROM INFANCY TO CHILDHOOD

From Infancy to Childhood; the Child from Two to Six Years. By Richard M. Smith, M.D. Boston: Atlantic Monthly Press, 1925.

The author tells us in his preface that, since the transition from infancy to childhood is a period of great mental and physical growth, many perplexing problems in the care of the child are presented which require more than native instinct for their solution. In this little book he has indicated some of the rules which will help parents to keep their children well, and aid them in training their minds.

The text of the book is preceded by two pages on colored paper giving a brief list of first aid suggestions. The chapters discuss in sequence: the doctor, mother and nurse; the nursery; physical development; care of the body; clothes; food; daily routine; sickness; and training and education. Height and weight tables for both boys and girls are given and charts for the keeping of records.

The book is purely nontechnical in style and written in an interesting manner. It is a worthy successor to Dr. Smith's former work, *The Baby's First Two Years.*

HEALTH CARE OF THE BABY

The Health Care of the Baby; a Handbook for Mothers and Nurses. By Louis Fischer, M.D. Fifteenth Edition completely Revised. New York and London: Funk & Wagnalls Company, 1925. Illustrated.

The author tells us in his preface that, because such great progress has been made in the management and especially in the feeding of infants, he has completely rewritten and revised every chapter of the new edition of this book. The book is divided into three main divisions of the subject: general hygiene of the infant; feeding; and miscellaneous diseases and emergencies. Under the first heading are discussed prenatal supervision and prenatal hygiene, the nursery, bathing and care of the navel, clothing, weight and growth, proper training, vaccination, dentition, x ray, and transfusion. Under feeding the author takes up the natural method, premature or weak infants, breast feeding, wet nursing, weaning, mixed feeding, artificial feeding, sugar intolerance, hygienic suggestions in bottle feeding, rules for feeding, intestinal indigestion and dyspepsia, feeding very sick infants, feeding during diarrheal periods, substitute foods, proprietary infant foods,

caloric method of feeding, vomiting, colic, hiccup, convulsions, constipation, rickets, scurvy and jaundice. Under miscellaneous diseases and emergencies he discusses fever and temperature, general rules for contagious diseases and fevers, isolation, the socalled diseases of childhood, catarrhal and sensitive children, skin diseases, accidents and emergencies, eye, ear, and mouth, bad habits, worms, night terrors, external applications and the medicine chest. From this list of subject matter it is evident that Dr. Fischer's book treats the various topics in detail and with thoroughness. However, the book is simply written and the illustrations are good and helpful in elucidating the text.

PEDIATRICS

Kinderheilkunde. Von Professor Dr. Hans Rietschel, Würzburg. Lehmanns Medizinische Lehrbücher, Band VIII. Zweite, völlig bearbeitete Auflage des Atlasses u. Grundrisses der Kinderheilkunde von Prof. Dr. R. Hecker u. Prof. Dr. J. Trumpp. Mit 75 Farbigen Abbildungen auf 37 Tafeln ynd lol Textabbildungen. München: J. F. Lehmanns Verlag, 1925. Pp. xi-446.

The author has given us a complete revision of Hecker and Trumpp's *Atlas und Grundriss der Kinderheilkunde*. In it we find the more recent advances in pediatrics of the last decade. It is not intended to serve as a textbook, but rather as a primer for the general practitioner and medical student. Consequently the clinical features of pediatrics and therapy are given special attention. Controversial material is intentionally omitted, as it finds no place in a work of this kind. The book is up to date and concise. Quite a comprehensive glossary of drug therapy and artificial feeding is appended. The illustrations are numerous and well selected. The colored plates are beautiful reproductions taken from actual cases observed in the wards.

THE CARE OF CHILDREN

Feeding, Diet and the General Care of Children. A Book for Mothers and Trained Nurses. By Albert J. Bell, A.B., M.D. Illustrated. Philadelphia: F. A. Davis Company, 1924. Pp. 290.

This is a very useful handbook for mothers and nurses. The text is simple, clear and sensible. The illustrations are from first rate photographs and more of the same quality might be used with advantage. The book may safely be recommended to all who are interested in puericulture.

MALARIA CONTROL

Department of Health Malaria Research Unit, Haifa. Annual Report, 1923. (Maintained by the American Joint Distribution Committee in cooperation with the Government of Palestine.)

This report considers first the malaria control demonstrations, then the permanent drainage work carried out by the unit, or by other agencies with unit supervision, and finally the work of the laboratory. Nine malaria control demonstrations were organized in different parts of the country. The efforts to control malaria were directed almost entirely towards eradication of anopheles mosquitoes, but the fight against the parasites was also employed as an aid in the campaign. The general plan of campaign in any given demonstration area consisted of the following steps: a, a complete survey of the breeding places within a radius of two kilometers or more from the settlements; b, a survey of the parasite and spleen rates, followed by intensive treatment of carriers; c, systematic house to house search for, and destruction of, hibernating mosquitoes, and d, control of mosquito breeding by various devices described. The first three steps were completed during the months of January to March, when there is no mosquito breeding; the actual campaign was started in April with the commencement of anopheles breeding, and continued until the heavy rains in December. Regular quinine prophylaxis was not given anywhere, but quinine was used only as a temporary measure where mosquito control had broken down. The effect of the control measures was a decided decrease in the malaria incidence. The cost of these measures varied in different districts from a minimum of $0.23 to a maximum of $1.55 per capita. Various drainage projects are described.

BIOLOGICAL TABLES

Tabulæ Biologicæ. Ed.: W. Junk. Uner Mitwirkung von 98 Fachgelehrten. Herausgegeben von C. Oppenheimer and L. Pincussen. Band I. Reine and Physiologische Physik, Physikalische Chemie und Biologische Anwendungen. Bearbeitet von Dr. ing. Bloch, Berlin. Berlin: W. Junk, 1925. Pp. 522.

The work in hand is a cyclopedic compilation of biological tables, the work of seventy-three contributors. The completed work will consist of four Royal octavo volumes, of which this is the first. There will be an alphabetical index, over two thousand pages with plates, partly colored and numerous illustrations and the entire work will probably be completed during the course of this year.

This is undoubtedly a unique publication, the first of its kind, which is destined to fill a long felt want of investigators, teachers and practitioners. It will supply data that have to be sought in various textbooks on medicine, anatomy, physiology, hygiene, physics, chemistry, zoology, botany, technics, immunology, pharmacy and bacteriology, and frequently the data are not available in these sources. What is more, the data are reliable, having been furnished by authorities in their respective fields. The constants and data supplied include the whole field of biology and the borderline sciences. The information is available at a glance, thereby saving much time and effort. If further reference is required, the quotations of all the original works are also given. Explanations of the tables and methods of computation are fully and explicitly detailed.

The following are the subjects included in the first volume, with their respective contributors: Tables of logarithms, trigonometric and other important mathematical formulas, physical units, and the units of mensuration and weight used in all countries, by Block; the hardness, density, ductility, and elasticity of the most varied materials of vegetable and animal tissues, discussed in every possible aspect, by Kisser and Cronheim, respectively; the extent of motion of the individual joints, the origins and insertions of muscles (tabular form), the centre of gravity, and data on walking, flight, swimming and jumping (special physiology of muscle), by du Bois Reymond; general hydrodynamics and aerodynamics, by Schiller; physiology of the cir-

culation, by Lehmann; the dissemination of plant material (seeds) by the air, by Metzner; the physics of optics, by v. Rohr and Kessler; the mathematics of optics, by v. Rohr; solar and celestial irradiation, by Kessler; artificial sources of light, by Bloch; the transillumination of plant and animal tissues, by Metzner and Pincussen, respectively; the anatomy and physiology of the eye, by Steindorff; the spatial sense of the eye, by Hofmann; the objective effects of light upon the retina and facial sensations, by Kohlrausch and Feufer; acoustics, by Block; physiological acoustics, by Schaefer and von Hornbostel; heat: thermometry and gas volumes, by Bloch and Gyemant; specific heat, critical data and conductivity, by Gyemant; the conduction of heat, by Korff-Petersen; medical climatology, by Dorno; body temperature, by Kanitz; cryoscopic and osmotic values, turgidity, plasmolysis, permeability of dyestuffs and neutral salts, by Grafe; the steam pressures of various substances at different temperatures, by Gyemant; the physical chemistry of vegetable tissues, by Grafe; the physical chemistry of the blood and of tissue juices, by Loeb; and anesthesia, by Winterstein.

This is a standard work that should find a welcome in every medical institute, clinic and scientific laboratory.

THE EXPECTANT MOTHER

Approaching Motherhood. Questions and Answers of Maternity. By George L. Brodhead, M.D. New York: Paul B. Hoeber, 1925.

This practical and clearly written little manual is, as its subtitle indicates, a sort of quiz compend for the expectant mother, giving in a series of hypothetical questions and terse answers the essentials of anatomy and physiology, including the signs of pregnancy. There are chapters on various phases of maternity from conception to lactation, on confinement, convalescence, nursing and the care of the baby. The questions of diet, dress, exercise, in short of hygiene of the various stages, are answered briefly and with common sense. Not the least interesting chapters are those dealing with popular fallacies such as maternal impressions, exercise and diversion, and discomforts of pregnancy.

ARROWSMITH

Arrowsmith. By Sinclair Lewis. New York: Harcourt, Brace & Co., 1925. Pp. 448.

Martin Arrowsmith is never a character in a book. No matter how minded the reader, the man Sinclair Lewis has written down, lives. And we quarrel with or welcome this muscle-bone-and-sinew person, feel with him, approve or disapprove of his actions, with the sublime disregard of his fictional setting. As stern a test as any for craftsmanship, vitality of theme. Sinclair Lewis has written a real novel.

Arrowsmith may have been a genius. We do not think so. Rather he was an average young man whom the gods of family and convention had fortunately overlooked. The usual dower of potentialities is his and he develops freely because he always dares to be himself. Not in any selfconscious way. The best counterirritant for selfconsciousness is some such all absorbing interest as research. Arrowsmith never sets a material goal before him like his fellow students. His life is one continuous pursuit of a goal. Every one of the others achieves what he has set out for—success, mediocrity. Only Martin with his freedom from the "done thing" arrives at—what? The knowledge that life is a grim and pitiful science, fascinating, inexorable. That the only opiate is work, the only god self. And that unending war is, was and ever shall be waged between man and nature.

The satire of *Arrowsmith* is a boomerang. It begins with the reactions of readers. Just as the medical staircase climbs from the all sufficient country doctor to the highest salaried mouthers of bunk, so each stratum of readers sees through or is piqued by a ruthlessly uncovered familiar strain of humanity. There are not many Arrowsmiths among us, but there are countless Almus Pickerbaugh's, Irve Watters, Angus Duers for us to defend.

Then there are the women in Arrowsmith's life history. Apparently Sinclair Lewis feels that the thinking mind must inevitably be solitary. A comradeship between Martin and his wife is possible only because she lets herself become his shadow. Naturally it would have been far healthier for Leora to have had a life of her own. She merely follows the pathway of least resistance, sinks herself in Martin, is lost. And by the bitterest irony the child that might have saved Leora is born to Joyce, the second wife, to whom it means nothing in terms of reality—a plaything, a pride, or a nuisance.

From the drudgery of medical school to the drudgery of living, the relentless path of Everyman gathers in its wake all seekers, all thinkers. All along are stopping places. And those that halt for a breath stay. Beyond lies, not happiness, nor satisfaction, nor success—just beyond—the sun that never sets, the question that makes or breaks a man.

VAL SINESTRA

Val Sinestra. By Martha Morton. New York: E. P. Dutton Company, 1925. Pp. 275.

Rather a slow moving story of supposedly volcanic passions. Many factors are hurled into its making, why one cannot quite tell, since comparatively little is made of them once they are blended. Centuries of turbulent ancestors produce two characters, the woman, a Catholic Jewess, the man, son of Swiss emigrants whose hearts break in exile. The other man is the barrier, convention, the husband. There is the struggle of the wife who is afraid of the things she wants, of the man who has never before been frustrated, of the husband who fears and dreads his fortune in marriage. There is a nurse thrown in, the perfect companion for the tortured husband. Noble resignation on all sides. The result, a culture medium bristling with the bacteria of morbidity, neuroses, masochism. From this mess springs a son. We think the author wants him to be the child of the lover but doesn't quite dare put it across. The lady is tormented as much by the fact that she did not bear her lover's child as she is by her continued guilty love. Everyone wallows in purple emotions.

And then there are sets of conservative Old New York, ancestral mansions full of antique treasure, modern palatial Park Avenue, Nature at home in the Swiss mountains, the cataclysmic rendezvous of the lovers at Val Sinestra in the storm, the accident, the miracle. Watch for the film at your local theatre!

Medicoliterary Notes.

Two recent books that have been put into Braille for the blind are E. Torday's *On the Trail of the Bushong* (Lippincott), and Prof. J. Arthur Thomson's *Outline of Science* (Putnam).

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The Library Service Bureau of the Franklin Square Subscription Agency names as follows the ten outstanding magazine articles in July publications: The Limitation of Armaments, by Rear Admiral Bradley A. Fiske in *Harper's Magazine;* Heredity—the Master Riddle of Science, by E. M. East in *Scribner's Magazine;* And So I Threw Away $20,000 a Year, by Edgar Lee Masters in the *Cosmopolitan;* The Moral Value of War, by George Wheeler Hinman, Jr., in the *Forum;* When I Was an Editor, by Jerome K. Jerome in *Harper's Magazine;* America Learns How to Play, by Weaver Pangburn in *McClure's Magazine;* Transplanted Men, by Edward S. Martin in *Harper's Magazine;* Whitewashing Jane Clemens, by Doris and Samuel Webster in the *Bookman;* Making a Wreck of the Veteran, by William Edler in the *American Mercury;* and Your Business and Mine, by George E. Roberts in the *Review of Reviews.*

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The U. S. Veterans Bureau has recently issued a report on Hospitalization of War Veterans Today, by Inez M. Pugh. The bureau is now operating forty-nine hospitals, seventy-four dispensaries, ninety-four clinical laboratories, and about one hundred x ray laboratories, and is housing twenty-nine thousand patients.

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Recent publications of McBride's, all suitable for summer reading, are a study of Edith Wharton by Robert Morss Lovett, one of the series of *Modern American Writers,* edited by Ernest Boyd; *Regarding the French,* by Moma Clarke, attractively illustrated with black and white drawings by A. Pecoud; *The Keys of the City,* by Elmer Davis, a jolly adventure story; and *The Letters of Rosa Luxemburg to Karl and Luise Kautsky.*

* * *

Harry Kemp, some of whose works have so furiously excited the censors, is reported to be on his way to Spain in search of material for a group of Spanish plays that he plans to produce next fall in the Poet's Theatre in New York.

* * *

A recent noteworthy publication from the Yale University Press is entitled *Social Aspects of Mental Hygiene;* Addresses by Frankwood E. Williams, C. Macfie Campbell, Abraham Myerson, Arnold Gesell, Walter E. Fernald, and Jessie Taft; with a foreword by James Rowland Angell and an introduction by Maurice R. Davie.

* * *

Brentano's announces for fall publication a volume of short stories of Oriental life by Achmed Abdullah. Three of Mr. Abdullah's plays will be produced next season in New York theatres, namely, *The Passionate Prince,* with Lowel Sherman as star; *Black Tents,* starring George Gaul; and *The Savage,* to be produced by Belasco.

* * *

Apropos of the legislation recently formulated by the British Government which will impose severe sentences on the practitioners of "witchcraft" in Kenya, and also on the headmen of the tribes who condone the offence, the *Manchester Guardian Weekly* tells us that superstition is by no means dead even in Great Britain, and to prove its point, refers to the trial last winter of a Devonshire farmer who was sent to jail for attacking a woman who, he believed, had bewitched his pig.

* * *

What will be the highest funicular railway in the world is now being constructed on Mont Blanc. It will run from Chamonix to the summit of the mountain. The system used is that of overhead cars suspended from a steel cable. The cars carry eighteen passengers apiece and travel at a speed of about six miles an hour.

* * *

In a recent issue of *Néoplasmes,* an international medical journal devoted to cancer research, Drs. Kotzareff and Weyl of Geneva describe their method of injecting directly into the blood a serum containing radium emanation. This serum is preferably made from the patient's own blood, and can be prepared in less than two hours and applied the same day. Its originators claim as its chief merits that it overcomes the difficulties of the application of radium rays or of multiple practice; and that the whole radioactive force of the emanation is brought into play with an astonishing uniformity and without the destruction of healthy cells.

* * *

Many of us will be surprised to learn that New York city's homicide rate for 1924 was well below the average of other large cities in the United States, and this in spite of the fact that our murders numbered 387, an increase of 79 over the number in 1923. Frederick L. Hoffmann, consulting statistician for the Prudential Insurance Company of America, in an article in a late issue of the *Spectator,* states that New York stands thirty-fourth in the study of the seventy-seven other municipalities on which the figures are based, and has a rate of 6.4 per 100,000 population. The average for the seventy-seven cities was 9.9, almost double the rate of twenty-five years ago, a fact that causes the writer to state that "the murder situation in America is worse than ever." He estimates that the annual toll of murders now exceeds 11,000. The greatest number of homicides was in Chicago, which had 509 and a rate of 17.5, New York was second, and Detroit third with 211.

* * *

An enterprising Boston journalist has unearthed the fact that the wreck of the Hesperus never took place in fact but only in the mind of the poet, Longfellow. The maritime records for 1839 tell of a great storm on December 15th, when, among twenty other vessels, the Hesperus was driven into Boston Harbor. The only damage this ship sustained was a broken bowsprit. Longfellow's diary for December 17th reads: "News of shipwrecks. Horrible. Off the coast, Twenty bodies washed ashore off Gloucester, one female being lashed to a piece of the wreck. . . . I must write a ballad upon this."

* * *

Incidental to Pirandello's visit to London and the production of some of his plays at the new Oxford Theatre, the manager has obtained the censor's approval of all except *Six Characters in Search of an Author,* which had a lengthy and successful run in New York two seasons ago. The ban makes those of us who saw the play here ponder on what the censor's objection of "immorality" can be.

* * *

Reading matter for summer a little more serious than fiction is suggested as follows: *The Crisis in Psychology,* by Hans Driesch (Princeton), a discussion of some of the problems of modern psychological research; *The Crowd,* by Gustave Le Bon, a new edition of a popular book (Fisher Unwin); *The Life After Death in Oceania,* by Rosalind Moss, a review of the burial customs and beliefs of the peoples of Polynesia, Melanesia, and Indonesia (Oxford); *Approaching Motherhood,* by Dr. George L. Brodhead (Hoeber); *The Science of Biology,* by George G. Scott (Crowell); *Newman as a Man of Letters,* by Joseph J. Reilly; *Playwrights of the New American Theatre,* by T. H. Dickinson, a discussion of "the roots of the American drama," with special chapters on Percy Mackaye and Eugene O'Neill; *Hull Down,* by Sir Bertram Hayes, an account of the happenings of forty-four years at sea, the last three titles published by Macmillan; and *Adventures of a Scholar Tramp,* by Glen H. Mullin; *The Wisdom of the Hebrews,* by Brian Brown; *The Personal Equation,* by Dr. Louis Berman; *What I Believe,* by Bertrand Russell, and *Credo,* by Edward Stewart White.

* * *

In a recent report of the Bureau of Mines it is stated that the annual loss through smoke for each person in the larger industrial cities in the United States is approximately $7.06. The yearly smoke bill for Philadelphia, for instance, is $16,852,000. This loss could be obviated by the use of modern stoking equipment.

* * *

Parts of the Tower of London that have never in all its history been opened to the public have recently been restored, in so far as that is possible due to vandalism committed in order to fit certain rooms for tenantry by the keepers, and may now be seen as they were originally when the old inscriptions were cut deep into the stone of their walls and floors by the tortured souls confined there who found this their only means of employment and recreation.

Abstracts from Current Literature

PEDIATRICS

Congenital Infantile Hypertrophic Stenosis of the Pylorus.—Emory G. Alexander (*Medical Clinics of North America,* November, 1924) states that the more modern view of the etiology of congenital infantile hypertrophic stenosis of the pylorus ignores the possibility of primary pathological overdevelopment of the muscle, but seems to incline toward regarding the hypertrophy as the result of faulty embryonic development which leads to an actual stenosis of the pyloric orifice, a condition which occasionally is demonstrable at operation, the hypertrophy of the muscle in turn being due to the increased effort required to force the food from the stomach into the duodenum. In other words, a compensatory hypertrophy. The development of the hypertrophy being slower in some children than in others accounts for the variation in age at which the obstructive symptoms appear. The disease shows more frequent involvement and more serious affection in boys than in girls. The symptoms may develop at any time from the seventh or eighth day to the sixth or eighth week of life or beyond that. The fact that most of the babies are breast fed infants excludes faulty diet as a possible cause of the condition. Diagnosis in most cases is not difficult, the most characteristic symptom being the persistent projectile vomiting.

The chief objective symptoms are vomiting and constipation. The onset is sudden. At first vomiting may be irregular without any definite relation to feedings, but soon it occurs from fifteen to thirty minutes after each feeding, which is given up entirely unchanged. As the disease progresses, the vomiting becomes less frequent but more copious, that is, it is cumulative as well as projectile. There is evidence of retention. In addition to milk, the vomitus contains swallowed saliva. Blood or bile in the vomitus is rare. The stools may take on the character of meconium. The child is constantly hungry, the bowels are constipated, and emaciation and loss of weight are rapid.

The abdomen is tense with a marked rounded prominence at the epigastrium, and there is resistance to palpation, sometimes also rigidity. Peristaltic waves across the abdomen, when present, are more or less pronounced, but not painful. The waves usually begin below the left costal margin, extending toward the median line and to the right hypochondrium beyond the region of the pylorus. When present, the tumor can be described as a round or cylindrical mass which rolls under the fingers, generally located from one to two centimetres to the right and above the umbilicus. The absence of a tumor need not exclude the diagnosis of congenital hypertrophic pyloric stenosis. Patency of the pylorus is usually determined fluoroscopically. Retention at the end of four hours of twenty-five per cent. of the barium meal clinches the diagnosis and may be taken to indicate the necessity of surgical interference. This condition should be differentiated from a spastic condition of the tract, which usually gets well without operation.

The consensus of opinion today is toward surgical treatment, although there are a few authorities who think that it can be relieved medically. The pylorospasm can be controlled by atropin, usually 1/1000 grain with each feeding, given until the desired physiological effect is obtained. This may take from two weeks to almost a year. No doubt there are cases of mild pyloric stenosis which will recover under medical treatment, but the severe cases will almost surely "die in the process" unless operated upon. Not infrequently under this plan of treatment the cases are brought to the surgeon in a state of dehydration and acidosis, altogether in a desperate condition. Preliminary treatment is often necessary. This consists of soda and glucose per bowel and intraperitoneal salt solution. General anesthesia is preferable to local anesthesia. The Rammstedt operation is the most popular at this time.

Convalescence is generally uncomplicated, provided proper postoperative care is given. This consists in maintaining the body heat with hot water bottles, and the administration of stimulants when indicated. If the postoperative vomiting is severe it can usually be relieved by gastric lavage. Feedings can be resumed almost as soon as the infant comes out of the anesthetic. Breast milk diluted is the most desirable. As a rule a low fat formula, one or two teaspoonfuls every two hours, with a small quantity of water between feedings is well tolerated. Protein milk or condensed milk is also useful. The amount is gradually increased until two or three ounces of milk are given every three hours interspersed with water. Extra amounts of fluid can be supplied by intraperitoneal saline given slowly or proctoclysis or hypodermoclysis of normal saline or soda bicarbonate and glucose for the first few days. Most of the patients are discharged within twelve to twenty days after operation.

Protein Milk as an Infant Food.—Sidney V. Haas and Louis H. Barenberg (*Archives of Pediatrics,* November, 1924), assert that eiweiss milk, prepared according to the method described, is satisfactory for prolonged use. The ingredients required are: 1, commercial buttermilk (bottled), which is prepared from fat free milk; 2, twenty per cent. cream, which is prepared by taking the top four ounces from a quart bottle of whole milk; 3, dextrimaltose. To one quart of buttermilk add one quart of water, bringing to a temperature of 135° F., remove from the stove and let stand half an hour, then remove one and one eighths quarts of whey, mash remaining whey and curds through a fine hair sieve, and add four ounces of twenty per cent. cream and sterile water, if necessary, to make a total of one quart. Percentage of sugar desired. The final product is a homogeneous mixture, consisting of very fine, soft curds, which remain in suspension for a considerable time, and pass readily through a fairsized nipple opening. It must not be overheated before feeding, else the curds separate. The taste is more agreeable than when prepared by other methods; odor and taste are slightly sour. This preparation will keep forty-eight hours.

This mixture is a suitable food for infants up to two years of age. It is particularly indicated in gastrointestinal disorders and marasmus and for premature babies, and celiac and infectious diseases. It is palatable and ordinarily well taken after a day or two. It is given undiluted, even to premature infants. The gain in weight is equal to that obtained by any other form of milk, and it is not temporary but progressive. The average gain in weight for all ages over the entire period was found by the author to be four ounces a week. The minimum average, 2.25 ounces; the maximum, 6.5 ounces. It seems to exert a protective action against ketosis, intoxication and gastroenterities in infants. Infants do not develop excoriation of the buttocks. Tolerance for this preparation is only equaled by that for breast milk.

Technic of Puncture of the Lateral Ventricle in Infants.—D. Miskolczy and K. Waltner (*Monatsschrift für Kinderheilkunde,* November, 1924) propose the following technic for puncture of the lateral ventricle in infancy:

An ordinary long, thin Record needle is used. The proper point of puncture, the direction of the puncture and its depth must be determined. The proper direction of the puncture is governed by three planes: 1, the sagittal plane crosses the internal angle of the eye; 2, the frontal plane runs through the middle of the space between the external angle of the eye and the uppermost point of insertion of the auricle; 3, the horizontal plane passes through the upper bony border of the superciliary ridge. The point of insertion of the needle is the point where the sagittal and frontal planes meet on the scalp and the direction of the puncture is the line where these two planes meet. The depth of the puncture is determined by the distance from the top of the scalp to the level of the eyebrows lying in the hoizontal plane. This depth should be marked on the needle before it is inserted. The point of puncture thus determined lies in the region of the fontanelle only up to a certain age, or up to a certain size of the fontanelle. When this is no longer the case, one must approach the frontal plane in a median direction until the fontanelle is reached. When this point is at least three to five mm. distant from the midline, one need not worry about injuring the longitudinal sinus. When this point lies nearer than three to five mm. to the midline, one approaches toward the anterior edge of the fontanelle in a posterior direction, until the desired distance is reached. The puncture must then be made somewhat externally and anteriorly, followng the directions mentioned

above. The point of puncture should always be made anterior to the coronary suture and never behind it.

The child should lie flat on its back and at such a level that the fontanelle of the infant and its face should be on the same level with the head of the physician. When the desired level of puncture is reached the syringe is attached to the needle and gentle sucton is made. The aspiration of clear cerebrospinal fluid shows that the lateral ventricle is punctured. If no fluid appears, the puncture is not successful. Blind stabbing must be avoided and the needle is preferably withdrawn.

New Methods for Making Esophageal Strictures Visible and Photographing Them, Particularly in the Case of Children.—Arthur Pollerman (*American Journal of Diseases of Children,* November, 1924) proposes the use of two methods to overcome the difficulties encountered with other methods.

1. Rubber tubes of different sizes, impregnated with lead, are sealed at one end and may be easily inflated. One of these tubes is drawn over a well oiled bougie and inserted into the esophagus, after which the bougie is withdrawn and the tube inflated. The walls of the inflated tube conform closely to the walls of the esophagus and permit the observation of the esophageal walls and of any stricture or other deformities. In the case of young children it is more convenient to inflate the tube without withdrawing the bougie. This method is easy and convenient and of advantage in most cases, excepting where there is a very narrow stricture or a very great diverticulum.

2. In cases where the tube cannot be used, the alternative technic is the administration of a suspension of bismuth subcarbonate in an emulsion composed of: oil of bitter almond, eight parts; gum arabic, four parts, and water, eight parts. This emulsion yields an easily perceptible and very even shadow, which is not displaced so quickly by the peristalsis of the esophagus. It shows the walls of the diverticulum of the esophagus as well as the narrow lumen of the stricture. As little as one or two teaspoonfuls are sufficient in most cases.

Diagnosis of Dilatation of the Bronchi in Children by Means of the Injection of Iodinized Oil.—P. Armand-Delille and C. F. Gelston (*American Journal of Diseases of Children,* November, 1924) recommend the following procedure for the diagnosis of dilatation of the bronchi in children. It is useful to disprove or prove the presence of bronchiectasis. It is not prudent systematically to practise this injection in tuberculous patients, because of a tendency toward congestion. It is also useful in cachectic patients with nummular sputum, suggestive of tuberculosis, and in cases primarily diagnosed as interlobar pleurisy or pulmonary abscess; also in the possible presence of an hepatic, subdiaphragmatic, or perirenal abscess.

A specially designed trocar is used, which is inserted through the cricothyroid membrane. It is made on the principle of the tracheotomy cannula, but smaller. A vegetable oil containing 0.54 gm. of iodine to the cubic centimeter is used. The oil must be warmed. The child is given 0.005 gm. of morphine sulphate a half hour before instrumentation. The patient is placed horizontally on the fluoroscopy table in the usual position for tracheotomy. After applying local anesthesia over the cricothyroid membrane, the trocar is forced through the tissues perpendicularly to the larynx. When the stylet is withdrawn, a whistling sound denotes a correct position. The syringe containing five c.c. of procaine is now attached, the head of the patient is slightly withdrawn from its extreme hyperextension, and slight pressure is exerted. A forcing out of the piston and the presence of air bubbles caused by the slight cough incident to the irritation of the first few drops of the solution confirm the correct position of the trocar in the trachea. The iodinized oil is then injected not too rapidly. From eight to ten c.c. of oil suffices as a rule to inject the bronchial tree of one lung, in children aged from seven to fourteen years, and requires from six to eight minutes.

The child is then immediately radiographed in a horizontal position. Fluoroscopy will demonstrate if there has been sufficient oil injected, in which case the trocar is withdrawn. There is no hemorrhage and no dressing is needed. Radiographs are then made in the vertical position.

The contrast between other radiographic reproductions and those obtained with iodinized oil offers extremely valuable information and should permit of the following conclusions.

With a picture of multiple shadows in the neighborhood of the hilum with an excessive bronchial ramification, the shadows being joined to the bronchi by a pedicle, the diagnosis of bronchial dilatation is justified. If the shadows are confluent but can, nevertheless, be separated by careful examination, the diagnosis of dilatation of the bronchi is again established. If the larger bronchial ramifications, without showing bunched localized shadows, appear noticeably enlarged one must admit a cylindric dilatation of the bronchi. Finally, if there is simply a question of shadows along the smaller bronchial ramifications, when they are compared to the normal picture, one may establish the presence of a moderate degree of bronchiectasis. Tuberculous cavities, which are easily enough diagnosed by ordinary röntgenograms, may be disregarded. Such cavities are usually located far from the hilum and the mediastinum, above the diaphragm, and are usually single.

Emphasis should be placed on the fact, however, that this procedure is not entirely innocuous, but it furnishes valuable and important information regarding the normal and pathologic appearance of the bronchial tree in children. The local application of iodine may even have a therapeutic value, as a recession of symptoms and a diminution of physical signs has been observed.

Hypoglycemia and Acidosis in Fasting Children with Idiopathic Epilepsy.—Edward B. Shaw and Margaret Moriarty (*American Journal of Diseases of Children,* November, 1924) found that in a series of five epileptic children, ten to fourteen day fasts were accompanied by: 1. An increase in blood uric acid. 2. Moderately marked acidosis, as indicated by acetone excretion in the breath; diminished alkali reserve; moderate fall in pH of the plasma. 3. A striking decrease in the blood sugar. 4. A slight diminution in degree of acidosis and rise in the blood sugar during latter days of fast. It is suggested that the diminution of blood sugar indicates the greater case of depletion of carbohydrate stores in childhood, and helps to explain the increased tendency to acidosis.

Nonrachitic Softening of the Ribs in Infants and Children.—Alfred F. Hess (*American Journal of Diseases of Children,* November, 1924) states that softness of the ribs and of the anterior thoracic wall is not necessarily a sign of rickets, although it may be brought about or intensified by this disorder. It is associated preeminently with the atrophic in contradistinction to the well nourished infant, two groups which should be differentiated in considering rickets. Infants who have never had rickets may nevertheless show softening of the ribs. It is found frequently in the newborn, especially those born prematurely, and may persist for years. In these cases there can be no question of a rachitic origin. Finally, it is not alleviated or cured by prolonged treatment with the two specifics for rickets, cod liver oil or ultraviolet irradiation.

Cervical Ribs in Children.—A. H. Southam and W. J. S. Bythell (*British Medical Journal,* November 8, 1924) draw the following conclusions: 1. Cervical ribs are congenital abnormalities and may be found in children at all ages. 2. In thirteen recorded cases twelve were bilateral and ten occurred in girls. 3. Their diagnosis will frequently only be made after röntgenographic examination. 4. In the majority of cases symptoms do not appear till adult life is reached. 5. The delay in the onset of symptoms may be due to the ossification of the rib, which is not complete till about the twenty-fifth year. In young children, however, they occasionally give rise to definite symptoms in the upper limb similar to those seen in adults. 7. In others their presence may lead to a diagnosis of spinal caries or torticollis, and the differential diagnosis can be established only by röntgenography. 8. Only rarely will treatment by operation be considered necessary.

Peritonitis in Scarlet Fever.—An analysis of the cases of E. S. Platou (*Archives of Pediatrics,* August, 1924) indicates that they fall into one of two groups: 1, those occurring early in the disease, concomitantly with a profound sepsis; 2, those which occur late and which are sometimes secondary to another complicating focus of infection. Of these, the early type seems to have a greater tendency to be generalized, and is believed by some to be a peritoneal manifestation of the eruption. The wisest therapeutic procedure is to defer operation as long as the condition of the patient will permit; then to perform a laparotomy, rather than to hope for adequate drainage through the rectum.

Studies in Scarlet Fever. — Konrad E. Birkhaug (*Bulletin of the Johns Hopkins Hospital,* February, 1925), undertook the study reported to determine the comparative value of convalescent scarlet fever serum and Dochez's scarlatinal antistreptococcic serum in the treatment of severe cases of scarlet fever. Thirty-seven patients with severe scarlet fever were treated during the first seven days of their disease with convalescent serum, the average dose being twenty c.c., given intramuscularly. Satisfactory recovery without complications occurred in thirteen of the thirty-seven cases; twenty-two patients showed temporary improvement, although complications developed and prolonged their convalescence, but eventually they recovered and were discharged in good condition. Two patients, moribund on admission, died from streptococcus beta hemolyticus septicemia. Thirty cases of scarlet fever were treated in the first four days of the disease with Dochez's serum, and one case on the seventh day. In seventeen cases the rash extinction phenomenon was demonstrated prior to the administration of the therapeutic dose of therapeutic serum, and in every instance this test was positive. The average dose of serum injected intramuscularly was forty c.c. Of the thirty-one patients treated, twenty-five recovered in from two to four days, without the development of complications. Three showed definite improvement after two to four days, and although minor complications occurred during convalescence, they were discharged completely recovered. Three patients, admitted in a moribund condition, died from streptococcus hemolyticus septicemia and pneumonia. The cases presenting septic complications yielded slowly and irregularly to Dochez's serum.

Postoperative Acidosis in Children.—Philip C. Jeans and Kenneth H. Tallerman (*British Journal of Children's Diseases,* October-December, 1924) studied the question of the causation of postoperative acidosis in children. The blood and urine before and after operation were followed, and those substances which might be causative factors were estimated. They found the lowering of the alkali reserve to be due in but small measure to acetone bodies, or to lactic acid accumulation. Phosphate retention is obviously not the cause of any acidosis that may exist. In fact, phosphate excretion constitutes a compensatory mechanism, the phosphates of the blood failing with a lowered alkali reserve, and the phosphate excretion being increased coincidently. The organic acids excreted increased, and in those instances showing a more marked lowering of the blood carbon dioxide, were in excess of both acetone bodies and lactic acid. It is therefore presumed that some as yet unidentified factor is largely responsible for that lowered alkali reserve which is observed. The fall of the carbon dioxide appeared proportional to the drop in blood pressure. It was observed also that qualitative tests for acetone bodies in the urine gave but a poor indication of the degree of acidosis present, if compared to the variation in alkali reserve.

Anteroposterior Tilt of the Pelvis: Its Variations, and Their Clinical Significance in Children.—Edgar F. Cyriax (*British Journal of Children's Diseases,* October-December, 1924) states that the causes that may induce pathological variations in the anteroposterior tilt of the pelvis are numerous. Posture and the assumption of vicious attitudes play an important part, just as these factors do in the production of lordosis and kyphosis elsewhere, and the effect of reflex contractions as the result of abdominal and pelvic disorders must not be overlooked. Among other causes not usually appreciated may be quoted the following: 1, Wearing of high heels; 2, partial spondylolisthesis; 3, weakness of the anterior abdominal muscles; 4, increase of power in the flexors of the pelvis; and 5, walking with the toes turned out too much.

The results of pathological alterations in the anteroposterior pelvic tilt fall under two heads: 1, the production of abnormal curves in the vertebrae above; and 2, the production of pelvic trouble. This may be brought about through several channels: alterations in the state of tonus or increased degree of contraction of the psoas muscles; alterations of excitability in the sympathetic nerves that lie on the psoas muscles of the latter are hyperemic or congested; impediment of some of the venous return and the lymph flow from the pelvis.

The treatment of pathological anteroposterior tilt is first to remove any causes, primary or secondary, that may be present, and subsequently or coincidently, to strengthen the muscles that will tend gradually to pull the pelvis back into its original position—remedial exercises. The importance of the recognition and correction of abnormal pelvic tilts is obvious, for the presence of this tilt means alteration of position and angle, both relative and absolute, of some or all of the abdominal and pelvic organs. It must be borne in mind that the function of any organ may vary directly in proportion to alterations of its correct position. It will be found that merely correcting the architectural defects may cure the conditions just mentioned. The examination of the degree of the anteroposterior pelvic tilt should form an integral part of the routine examination of spinal curvatures in general.

Effect of a Small Breakfast on the Energy Metabolism of Children.—Virginia Bauer and Katherine Blunt (*Journal of Biological Chemistry,* February, 1924) repeatedly observed seven children early in the morning and again on the same day about four hours after a small breakfast, in order to determine whether basal metabolism determinations could be safely made on children at noon instead of before breakfast. The average oxygen consumption at the later hour was only 0.6 per cent. higher than before the meal. The use of the noon hour is, therefore, to be considered safe as a routine procedure provided the breakfast does not exceed 470 calories with not more than 14 gm. of protein and is eaten at least four hours before the metabolism observation.

Mother's Milk as a Source of Infection in Epidemic Pemphigus Neonatorum.—Ralph R. Mellon, Dorothy Caldwell and W. W. Winans (*American Journal of the Medical Sciences,* March, 1925) maintain that the evidence submitted is at least presumptive that certain outbreaks of pemphigus neonatorum are traceable to an initial case infected by its own mother's milk. Such findings occurred three times in sporadic cases that might have given rise to outbreaks had not the mothers been segregated, while in a third sporadic case with these findings an outbreak of ten cases actually did result. A similar outbreak was also traceable to a burn infected with aureus, suggesting a diverse origin for the infecting cocci. No epidemiological type could be associated with the disease, the organism being serologically the same as those isolated from abscesses, etc. When the Staphylococcus aureus is rampant, as it has been for several years, it may be present in the milk and even in the blood stream of certain mothers with few or no symptoms, who may be viewed as carriers. The mild infection in one mother resembled in no way true impetigo, which fact fails to support the theory that pemphigus neonatorum and impetigo contagiosa bullosa are identical diseases. By concentration of attention on this means of transfer we do not intend to minimize the predominant role played by case to case contact, undoubtedly the common method of transmission in institutions, but from a public health viewpoint it would seem highly important to isolate both mother and child when it can be shown that the mother harbors the infecting organism.

The Potentially Undernourished Child.—Arthur M. Kimberly (*Boston Medical and Surgical Journal,* March 26, 1925) makes the following valuable suggestions: "Recognizing in the perfectly healthy infant of one year the potentially undernourished child of this later period, it devolves upon us to urge the importance of continued supervision and weight recording during this period. We must teach that errors in diet and hygiene at this time may breed serious consequences, often the more so, because their onset is insidious. We must insist that children require, if anything, greater regularity of schedule with even more rigid preservation of sleep and rest periods than formerly. We must emphasize that the child is still essentially a baby and requires the same careful selection of food as he did when he was an infant.

In regard to food habits: we must discourage the promiscuous sampling of food at the table; and we must insist that children be taught to eat unquestioningly the food that is set before them, urging, if necessary, a prompt withholding of other foods until properly trained. His management must be guided by the principle that the adults must set the example of correct food habits, and must be inspired by the assurance that a child *can* be taught to eat and enjoy the foods that are good for him. We must urge that his training may be accomplished more readily by the force of approbation, enthusiasm and encouragement than by dogmatic commands. On the other hand we should teach that if merited his punishment should follow with inevitable certainty and,

as far as possible, have an educative value. We should be prepared to provide suitable diets containing adequate mineral matter, roughage, vitamins, and total calories properly balanced. The mother should be warned how easily children become overfatigued and consequently irritable. Respiratory infections must be guarded against; immunization carried out at proper times; and convalescence should be prolonged until normal weight and strength have been regained. Social adjustments should be made, so far as possible, to prevent friction and abnormal mental strain. Success in carrying out such a preventive program for the pre-school period will require a well formulated office outline with a definite program of the health habits that shrould be acquired at each age period. Painstaking inquiries into the child's habits and activities must be made and a shrewd insight into the home situation must be obtained.

Obesity in Children.—F. S. Langmead and Edwin G. B. Calvert (*Lancet,* November 29, 1924), in a discussion of this subject, with special reference to carbohydrate metabolism and its modification by the administration of certain ductless glands, draw the following tentative conclusions, as their investigations are still incomplete: 1. The blood sugar curves in cases of great obesity in children—too readily called hypopituitarism—are diverse in their outlines. 2. In two such cases the administration of posterior pituitary substance led to a normal curve, favoring the view that in cases of hypopituitarism it is the posterior lobe which is chiefly concerned with the altered carbohydrate metabolism. Its extract pituitrin, however, had less influence. 3. In a third case, with more normal general development and with normal sexual development, the anterior lobe had the correcting effect. 4. The slightly inferior influence on the blood sugar curve of the whole gland substance in the above three cases appears to indicate that in these cases the good effect on carbohydrate metabolism obtainable by giving the appropriate gland substance may be counteracted to some extent by combining it with the extract of the other lobe. 5. Incidentally, these experiments appear to show that pituitary gland substance given by the mouth is not inert. As far as carbohydrate metabolism goes, the blood sugar curve being used as an index, it seems logical to administer that lobe of the pituitary which produces the better effect on sugar tolerance. However, considering the cases generally, it will be noticed that the whole gland gives quite good results. In one case the addition of a small dose of thyroid improved matters. On the whole, the results might be construed as indicating that a properly balanced pluriglandular therapy is required for such cases as these; the suggestion has a pharmacological rather than a physiological basis. 6. Thyroid extract may reduce weight in cases of this kind, but it can hardly be considered as an ideal remedy per se, in that it does not restore carbohydrate metabolism to normal. 7. Possibly the reduction of a normal blood sugar curve may prove a useful guide to treatment, since when this happened with pituitary substance the patient's condition improved generally. 8. Possibly, too, a somewhat restricted diet, in which the protein is relatively increased, the carbohydrate curtailed, and the fat practically eliminated, may constitute one of the most effective means of stimulating metabolism and reducing weight. 9. The method of preparation from the testes of animals of what may possibly be their internal secretion is described, and also the very considerable loss in weight associated with its administration in one case reported.

RESPIRATORY DISORDERS

Extrapleural Thoracoplasty in Pulmonary Tuberculosis.—C. F. Gondolfo (*Bulletins et mémoires de la société médicale des hôpitaux de Paris,* July 17, 1924) asserts that no practitioner who institutes artificial pneumothorax in tuberculosis can now afford to neglect extrapleural thoracoplasty. The indication for it is absolute in a case of three or four years' standing with several acute recrudescences and a history of pleurisy during childhood or at puberty, or of cortical pleuritis for three or four months, followed by a change of the disease to a sluggish course, with evidences of fibrous disease on examination of the patient. Chest asymmetry is manifested in a marked retraction on the affected side; the supra and infraclavicular fossæ are depressed; the lowest intercostal spaces show evidence of inversion of the diaphragm; chest elasticity is reduced or lost, percussion eliciting zones with varying degrees of pulmonary or pleuropulmonary condensation; auscultation reveals small, but numerous disease foci, and fluoroscopy shows, aside from the tuberculous lesion, retraction of the mediastinum toward the affected side. In such cases an attempt at pneumothorax usually gives negative results, and general and climatic treatment have, as a rule, been tried and failed. The operation is necessary and permits the lung to retract to one fourth its original size. A second absolute indication is where pneumothorax fails to compress the diseased tissues on account of pleural adhesions. In these cases a partial thoracoplasty is done to complete the effect of the penmothorax. The third absolute indication is perforation of a cavity following a coughing spell, with infection of the pleura, or the pleural discharge of a pneumothorax which turns into a purulent discharge. In the first of these very ominous complications extrapleural thoracoplasty is the only measure affording permanent adhesions of the two pleural layers. The secret of successful thoracoplasty is its performance in three stages. This is because: 1, The technic is simplified and available to any trained surgeon; 2, shock is trifling and the pain during cough less; 3, the process of retraction takes place gradually and more naturally; 4, at the time of the second operation reconstruction of the chest wall has already begun and the ultimate deformity is less.

Extrapleural Thoracoplasty in Bronchiectasis.—C. A. Hedblom (*Surgery, Gynecology and Obstetrics,* June, 1924) presents a series of roentgenograms which he discusses with the following comment. While massive collapse of the lung has been achieved with marked relief of symptoms in all of these cases, it must be recognized that the diseased bronchi and lung tissue remain as a possible source of further acute exacerbation of infection. The persistence of cough and sputum may be due to an unrecognized involvement on the other side, but in some cases reported there are physical and röntgenological signs of persistent cavitation in the collapsed lung. If the symptoms persist, extirpation of the diseased tissue is contemplated.

Tuberculosis of the Larynx.—R. S. Pentecost (*Canadian Medical Association Journal,* August, 1924) urges a closer cooperation between the physician and laryngologist and says that early recognition of tuberculous involvement of the larynx is most desirable and regular laryngological examinations should be made of all patients suffering from pulmonary tuberculosis. The policy of *laissez faire* should be replaced by active local treatment. A large percentage of cases of laryngeal tuberculosis may be completely arrested by the employment of the following measures: Hygienic and dietetic treatment; absolute vocal rest; appropriate treatment of any associated pathological condition in the upper respiratory tract; heliotherapy; application of the galvanocautery to the affected areas in the larynx.

Criteria for Artificial Pneumothorax.—R. C. Wingfield and G. Selby Wilson (*Lancet,* July 26, 1924) say that if a relapse occurs during the exercise treatment in an artificial pneumothorax case, there are two salient points of interest: first, the longer it is, the worse is the prognosis; second, the earlier it occurs the less likely is the patient to do well. A relapse which takes place for the first time when the patient has reached an advance grade of exercise seems to be of singularly little importance. If a patient is going to do badly, he will relapse early; if he is going to do well, he will relapse late or not at all. A regular temperature is of good prognostic significance; an irregular one is the reverse. In men a periodical temperature is an unfavorable feature. The daily variation seems to have no special significance. Patients who have done well have more often had a complete collapse than those who have done badly. A considerable number of patients with bilateral disease are capable of responding well to artificial pneumothorax treatment, and of reacting favorably to the system of graduate exercise. The development of pleural fluid—so long as it be not of a purulent type—is a matter of supreme indifference to the prognosis. It appears that the advent of fluid is likely to be occasioned by exercise. Persistence of tubercle bacilli in the sputum after the induction of artificial pneumothorax is a bad prognostic omen. One of the most valuable criteria of the patient's reaction to treatment is the change in weight which occurs after his admission to the sanitarium. An early loss in weight should prove a most valuable arresting signal, and should lead to a careful reconsideration of the further treatment of the patient. The longer the patient's stay in the sanitarium the more

weight is he likely to gain or the less is he likely to lose. The author was mostly concerned with an examination of the results obtained by the graduated exercise treatment of patients on whom an artificial pneumothorax has been induced either by choice or by necessity.

Empyema.—Ambrose L. Lockwood (*Canadian Medical Association Journal,* October, 1924) presents the following points.

1. The incidence of acute empyema is about three times as common in males as females and except in traumatic cases, is as yet beyond the control of the medical attendant.

2. Apart from postural rest, inclining the patient on the affected side, or limited strapping of the involved side, the chest should not be tampered with in the developing stage of the disease.

3. Aspiration for diagnosis is rarely necessary.

4. Guided by the elevation of temperature, pulse and respiratory rate, the degree of dyspnea, the displacement of the heart, and the toxic condition of the patient, generally, aspiration should be delayed until the fluid is well walled off, and the lung about it firmly adherent to the chest wall.

5. If aspiration is employed therapeutically it should be resorted to at least every thirty-six hours depending upon the febrile reaction of the patient.

6. Intercostal incision or rib resection for drainage should only be employed after repeated aspirations of some form of closed drainage has failed to cure the disease.

7. Chronic empyema must be looked upon as the disastrous sequelae of a mismanaged acute empyema.

8. Radical interference with a chronic empyema cavity should only be undertaken after palliative measures have failed to obliterate the cavity.

9. Our aim should be to bring the collapsed lung out to the chest wall rather than to collapse the chest wall to the lung.

10. Above all we should constantly keep in mind that a combined mortality of more than two per cent. is not due to the disease *per se,* but in most instances to too early, too radical, and injudicious interference generally by the medical or surgical attendant. It is better to have a live patient with a draining sinus than a dead one with the chest closed. Above all, keep them alive.

Pneumonia with Special Reference to Diagnosis and Treatment.—In the majority of cases the diagnosis is easy; a sudden onset of illness, pain in the side, cough and fever, rusty sputum, and leucocytosis spell pneumonia. In young children and senile persons the diagnosis is often difficult. It is also difficult when pneumonia develops as a complication during the course of some other malady. David Riesman (*Medical Clinics of North America,* November, 1924) points out some of the errors and some of the ways of avoiding them.

Quite often in children, but by no means infrequently in adults one sees cases that start out as pneumonia, with chill and high fever, but with little or no cough, and without definite signs in the chest. These are probably cases of central pneumonia. Careful examination usually reveals some change in the pulmonary physical signs, especially in spots near the angle of the scapula and in the axilla. Percussion may show changes over a spot perhaps not larger than a silver dollar. The note is a little shortened rather than dull. The breath sounds are muffled or suppressed, and a few fine râles are usually heard on coughing; the voice will have a twangy quality. In addition, an expiratory grunt justifies the diagnosis of pneumonia. A high leucocyte count is a valuable corroborative sign, but is not always present.

The most confusing cases are those which begin with abdominal symptoms. It is a good rule not to make a diagnosis of acute appendicitis or other acute abdominal disease until pneumonia and pleurisy are excluded, especially if the leucocytes in a suspected case of abdominal disease are above 20,000.

Postoperative pneumonia may not present typical signs and symptoms. There may be no cough and no pain of particular severity, only a little fever and increase in respiration rate. The lesion is rarely in front. It follows more often upon abdominal than upon pelvic operations. Pneumonia may also resemble typhoid fever, meningitis, pleurisy, tuberculosis, pulmonary infarct, pulmonary congestion, acute pericarditis, and pyelitis.

In the pneumonia of children, the following points need emphasis: 1. Lobar pneumonia is more common in infants and children than the textbooks teach. 2. The physical signs of primary lobar pneumonia are at times late in appearing. The combination of high fever with leucocytosis is suggestive. 3. The signs may be apical or basal; sometimes they appear first in the axilla. 4. An expiratory grunt is very suggestive. 5. Convulsions, delirium, and meningeal symptoms are common in the pneumonia of young children. 6. Abdominal symptoms, pain, tenderness, and vomiting are often present and mask the pneumonia. 7. Lesne's scalene sign may be of value. It consists in immobility of the subclavicular region due to contracture of the scalene muscles on the side affected. 8. Empyema is a frequent termination, and manifests itself by continuing fever, pallor, sweating, etc. 9. Primary lobar pneumonia in children is a very benign disease; even if empyema develops, the prognosis is good, with proper treatment.

Endocarditis is surprisingly rare in pneumonia, but myocardial change is common. Abnormalities in rhythm are not common, but auricular flutter and fibrillation have been observed. Digitalis may lead to arrhythmia. The so-called Gibson rule, namely, that when the blood pressure expressed in millimetres falls below the pulse rate so that the two cross, the prognosis is bad, is not without exception.

The preventive treatment of pneumonia is not yet fully established.

The curative treatment divides itself into specific treatment, general treatment, and treatment of complications.

Specific treatment is of five types: 1. The use of serums from immunized animals is available only in pneumonia due to Type I pneumococcus, but even this is not an ideal specific. Antipneumococcus serums must be given as early as possible, intravenously, and in large amounts. The danger of anaphylaxis may be avoided by preliminary desensitization with injections of adrenalin. Serum sickness very frequently follows and is a most depressing sequel. 2. The use of serum from convalescent patients has been abandoned. 3. The use of chicken blood and chicken blood serum has shown some good results, but it is a questionable agent. 4. The results with extracts or antibodies from the pneumococci themselves have not been brilliant. 5. Chemotherapy includes quinine and mercurochrome. The former does not rank as a specific in human infection. Optochin (ethylhydrocuprein) is an unsafe drug. Mercurochrome has given good results in streptococcus pneumonia. Cold air treatment, if applied in all cases, does harm. It should be used only in patients that are vigorous. Diathermy has also been recommended.

In the general treatment, aside from the uncertain specifics mentioned, toxemia is best lessened by diuresis and keeping the bowels open. The best diuretic is abundance of water, enough to produce fifty to seventy ounces of urine a day. The following rules should be followed: The less handling the better; no sponging except in unusual cases; no company; icecap to the head, and alkalinization of the patient. Urinary retention should be avoided. The diet should consist of cooked cereals, fruit juices, milk or buttermilk, poached or soft boiled egg, junket, plain custard, wine jelly, water ice. If there is nausea, ginger ale, or charged water is given. Myocardial failure is best avoided by giving digitalis from the beginning in any patient who is decidedly ill. For developing pulmonary edema, give atropin, grain 1/75, repeated in two hours if necessary; digitalis hypodermically; caffeine sodium benzoate and camphorated oil. Dry cupping may be useful. For marked cyanosis with or without pulmonary edema, venesection is indicated and perhaps the use of oxygen. Tympany requires external application of turpentine stupes, the rectal tube, asafetida enemas, and pituitrin hypodermically. Insomnia is best controlled by bromides or morphine. Distressing cough must be combatted with codeine or morphine. Alcohol seems to be of great value in septic pneumonias and in alcoholics. In children, the flaxseed poultice is valuable.

The causes of delayed resolution are the following: failure of proper liquefaction of the exudate through a lack of ferments or an excess of antiferments; empyema, abscess of the lung, tuberculosis, pericarditis, syphilis, arthritis, otitis media, perhaps hepatitis, and residual edema.

The pneumonia patient requires at least two weeks to recuperate under supervision.

Experimental Production of Pneumococcus Pneumonia in Mice by the Inhalation Method.—Ernest G. Stillman and Arnold Branch (*Journal of Experimental Medicine,* December, 1924) conclude from animal experiments that nonimmune mice which are alcoholized and die of septicemia following exposure to a spray of virulent pneumococci rarely show any localization of infection in the lung. Mice partially immunized by previous inhalations of living or killed pneumococci and which while alcoholized are exposed to an atmosphere of virulent pneumococci often develop a pneumococcus lobar pneumonia. Mise which have been rendered relatively immune to one type of pneumococcus may frequently develop lobar pneumonia after the inhalation of pneumococci of another type.

Pathology of Experimental Pneumococcus Pneumonia in Mice.—Arnold Branch and Ernest G. Stillman (*Journal of Experimental Medicine,* December, 1924) state that lobar pneumonia in mice is not of strict anatomical distribution, the infection spreading in the interstitial tissue like any other cellulitis. Following inhalation of pneumococci the organisms are not visible histologically in the lungs of mice, either in the bronchi or alveoli. The administration of alcohol produces no evident histological changes in the lungs of mice. In partially immunized mice which have been exposed to a pneumococcus spray while alcoholized, true lobar pneumonia not infrequently develops.

Relation of Chloride Metabolism to Toxemia of Lobar Pneumonia.—Russell L. Haden (*Journal of Laboratory and Clinical Medicine,* February, 1925) says that the observations reported are based on the study of seven cases during an acute lobar pneumonia. In all, the blood chlorides were below the normal level. In five, the nonprotein nitrogen and urea nitrogen were above the upper level of normal. Two patients died, and in the other three, the nonprotein nitrogen and urea nitrogen returned to normal as the blood chlorides reached the normal levels. The urine chlorides were very low in all cases. One patient was treated with sodium chloride, being given 152 gm. of salt by mouth, besides that taken in with the food. Haden states that the changes observed are probably due to a generalized protein destruction. The administration of the missing chloride seemed to influence markedly the course of the disease. In all cases of lobar pneumonia, sufficient chloride should be given to keep the blood chlorides at or near the normal level.

MALIGNANCY

Marked Structural Alteration in a Breast Carcinoma Recurring After Eleven Years.—Edward M. Hanrahan (*Bulletin of the Johns Hopkins Hospital,* February, 1924) describes a case diagnosed as Paget's disease of the breast, which recurred eleven years after operation. The morphology of the recurrence is the chief point of interest, as the tumor presented malignant transformation of the stroma or very marked alteration of epithelial cells. The transformation of the morphology of the tumor is discussed.

Inflammatory Carcinoma of the Breast.—B. J. Lee and N. E. Tannenbaum (*Surgery, Gynecology and Obstetrics,* November, 1924) from a survey of a number of cases, conclude that inflammatory carcinoma appears to be a distinct clinical phase of carcinoma of the breast. Generally this type has been unrecognized, being frequently mistaken for other diseases of the breast. The inflammatory appearances are characteristic. This variety of mammary cancer shows no constant pathological type. The most striking pathological change is a wide invasion of dermal lymphatics by carcinoma. Bacteriological and biochemical studies have failed to explain the inflammatory manifestations. The cases do badly if treated surgically. At present radiation offers the only hope of palliation, diminishing the patient's suffering, and giving a definite prolongation of life.

Cancer of the Thyroid.—J. L. Decourcy (*Annals of Surgery,* October, 1924) has observed that cancer of the thyroid is rarely primary, but it develops in practically every case in adenomata of years duration. This at once suggests that cancer of the thyroid could be eliminated in great part at least, by the early removal of all adenomata. All adenomata should be removed as soon as diagnosed. Surgery offers a one hundred per cent. cure in adenomata of the thyroid with a mortality of less than one per cent. in all cases. If toxic, of course, proper judgment should be used as to ligation, time to operate, etc. X ray and radium have no place in the treatment of adenomata, in my opinion, and are more apt to do harm than good. If the above treatment were carried out, cancer of the thyroid would be reduced to a minimum. When cancer has advanced however, to a stage where a clinical diagnosis is possible, then the method of treatment becomes problematical. At present I feel that the outlook is hopeless and that they will do just as well if left alone. I may be wrong. I do not, however, believe that surgery is indicated. Possibly needling with radium, at present offers the best means at our disposal. Deep x ray therapy may find its place in the treatment of thyroid cancer but I feel that it may do damage in the destruction of the parathyroid bodies. The technic for needling with radium is as follows: The wound is opened and the muscles separated as in the first step of a thyroidectomy. The needles are then inserted into one lobe of the mass, each needle being about one half inch apart. The wound is left open and the needles removed in twelve hourse, the following morning, or twelve hours later the wound is closed. The patient is then kept under observation for four weeks. Usually after two or three weeks the mass becomes edematous and there is some danger of strangulation. About the fourth week the other lobe is needled. This treatment should be followed by a prolonged course of x ray therapy.

Virulence Test and Operative Mortality in Carcinoma of Cervix.—The investigations of E. Bumm (*Zentralblatt für Gynäkologie,* September 13, 1924) with the Ruge-Philipp virulence test have shown that in ten per cent. of the patients with operable carcinoma of the cervix virulent germs are found in the vagina. Operation in these cases is associated with great danger, in spite of a careful technic, as severe infection usually follows. Germ virulence has the same significance in the radium treatment of carcinoma. This virulence of germs has an extraordinary significance also in obstetrics, particularly in Cæsarean section.

In order to eliminate this danger the author makes use of local disinfection. The ulceration is first cauterized, then washed with sublimate alcohol and, finally, silver nitrate is applied on packing. This form of treatment has given good results. However, this treatment destroys only the germs that are on the surface, not those lying more deeply. Streptococci and grippe excitants are particularly resistant to treatment. Even the production of an increased resistance of the body has not been found successful. Therefore, there remains nothing but the avoidance of operative procedures. Radium treatment is preferable in such cases.

Malignant Epithelial Tumors of the Thyroid.—A. Graham (*Surgery, Gynecology and Obstetrics,* December, 1924) offers the following conclusions to his investigations: At least ninety per cent. of malignant tumors arising from thyroid epithelium have their origin in preexisting adenomata. The morphological character of the cells and tissue is an unreliable basis for the determination of malignancy of thyroid epithelial tumors. The malignancy of thyroid epithelial tumors depends upon their tendency or capacity to invade the capsule, surrounding tissue, lymphatics, or blood vessels. The most constant single indication of thyroid epithelial malignancy is invasion of the bloodvessels. Scirrhous and papilliferous adenocarcinomata are the only two types of epithelial malignancy in which invasion of the bloodvessels has not been observed. These two types together constitute about fifteen per cent. of the total and are primary lymphatic invaders. Epithelial tumors that are encapsulated and show no invasion of the bloodvessels are benign, irrespective of their microscopic appearance otherwise. Epithelial tumors in which one finds invasion of the blood vessels cannot be regarded as entirely harmless, irrespective of their microscopic appearance.

The term carcinoma is proper for epithelial tumors of the thyroid that are malignant regardless of their microscopic appearance. The term malignant adenoma is useful and convenient for the purpose of denoting a subgroup under carcinoma but is not, strictly speaking, correct terminology. Such terms as *wuchernde struma,* proliferating adenoma, metastasizing adenoma, metastasizing colloid struma, metastasizing colloid goitre, and metastasizing normal thyroid are confusing, misleading, inaccurate, serve no useful purpose, and should be eliminated. In view of the present available data the diagnosis and classification of malignant epithelial tumors of the thyroid present no greater difficulties and require no more complicated nomenclature than is commonly encountered in other organs and tissues of the body.

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Medicolegal Notes.

DEATH FROM ERYSIPELAS FOLLOWING VACCINATION HELD NOT COMPENSABLE

The Illinois Supreme Court holds, Jefferson Printing Co. v. Industrial Commission, 312 Ill., 575, 144 N. E. 356, that death from erysipelas following vaccination was not compensable as due to an accident arising out of the employment, where the record failed to show any susceptibility to the infection of erysipelas peculiar to the work in which deceased, a printer, was engaged, or incidental to the business of his employer.

TYPHOID FEVER FROM DRINKING POLLUTED WATER DUE TO DEFECTIVE VALVE HELD ACCIDENT

The Illinois Supreme Court holds, Christ v. Pacific Mut. Life Ins. Co., 312 Ill., 525, 144 N. E. 161, that the death of a railroad employee from drinking water from pipes containing polluted water due to a defective gate valve intended to separate the drinking water from the polluted water, resulting in his contracting typhoid fever, was caused by "external, violent and accidental means" within an insurance policy. (231 Ill. App. 439 affirmed.)

ROYALTIES ON MEDICAL WORKS HELD PARTLY PRINCIPAL AND PARTLY INCOME

A controversy arose in the settlement of a physician's estate as to whether royalties on a medical book of which he was the author constituted principal or income. The New York Appellate Division holds, In re Elsner's Will, 210 App. Div. 575, 206 N. Y. Supp. 765, that the property represented by the contract and the royalties should be apportioned between capital and income, in view of section 204 of the Surrogate's Court Act and also because the practice has long been recognized and adopted in analogous cases, both in New York State and other jurisdictions. The court said: "Such funds partake of the nature both of principal and income. The original principal or capital was the book itself, a creation of the skill, experience and learning of the author. The book might have been sold directly to the publisher either for a definite sum payable immediately, or by installments for a period of years. In either case, the principal would then be the sum of money thus received, substituted in place of the original capital, the book. This sum, if invested, would produce income. But the author preferred to take a speculative contract to effect a sale, whereby he received a percentage of profits to continue as long as the book met with favorable sale. The principal is, under these circumstances, the beneficial interest the author had in this contract—its present value as a producer of income. It would be a simple question if the principal remained unimpaired in value. Its earnings would be income. But it is common knowledge that professional works are books of a period and their profitable life limited in time. Progress in the particular science concerning which they treat opens new and interesting fields of research and discovery. Almost invariably later books by other authors containing the new learning thus acquired supersede the older books. Their sale declines and vanishes. This is obviously the experience of this book, which produced royalties of nearly $4,000 in 1916, and but $13.50 from July 1, 1922, to December 31, 1923.

ANSWERS TO QUESTIONS AS TO INSURANCE APPLICANT'S HEALTH

The Oklahoma Supreme Court holds, Security Benefit Assn. v. Green, 229 Pac. 1061, that if the applicant for life insurance truthfully states the facts to the agent pertaining to the questions being asked him about his health, and the agent who is authorized to ask the questions and write the answers deduces erroneous answers and writes them into the application, the beneficiary will not be prevented from showing the true facts of the insured's warranty. In an action by the beneficiary for recovery on the policy, the court holds that the insurance company will be estopped to set up the erroneous answers as false representations by the insured to defeat recovery.

EMPLOYEE'S STATEMENTS AS TO ORIGIN OF DISABILITY

An employee's statements to physicians several days after an accident ascribing the origin of his disability to his daily work, were inadmissible under the hearsay rule, and did not become competent because of the subsequent death of the employee.—Ross Case (Me.) 126 Atl. 484.

APPENDICITIS FROM BLOW ON ABDOMEN

The Washington Supreme Court holds, Clark v. Department of Labor and Industry, 230 Pac. 133, that appendicitis entitled claimant to compensation where the evidence showed that it resulted from a blow on the abdomen from one of a number of blocks claimant was sorting, medical testimony for claimant, including that of the physician who treated her, being to the effect that appendicitis can be superinduced by trauma, although the chief medical officer was of opinion that appendicitis does not result from accident.

PROOF INSUFFICIENT TO SHOW TRAUMATIC HERNIA

The New Jersey Supreme Court holds, Rosario v. Heller Bros. Co., 126 Atl. 294, that where the proof fails to indicate any puncturing or tearing of the abdomen wall or any prostration there is no proof of a traumatic hernia under the Workmen's Compensation Act.

REFUSAL TO HAVE OPERATION PERFORMED

The Maine Supreme Judicial Court holds, Beaulieu's Case, 126 Atl. 376, citing Ruabon Coal Co. v. Thomas, 3 B. W. Comp. Cas. 32 to the effect that whether or not a workman is unreasonable in refusing to have an operation performed is a question of fact in a Workmen's Compensation case, with which an appellate court will not interfere where the doctors are not wholly agreed as to the advisability of the operation, holds that, where the Chairman of the Maine Industrial Commission's finding that the claimant had not unreasonably refused to submit to proper surgical treatment was justified by the evidence, the doctors and surgeons being at variance as to the exact nature of the treatment which should be tried, and all practically admitting that any operation would be followed by great pain and inconvenience, and that the results of any treatment would be uncertain as to permanently successful results, a petition to discontinue compensation was properly denied.

QUESTION TO MEDICAL EXPERT AS TO COURSE OF BULLETS HELD ADMISSIBLE ON CROSS EXAMINATION

The Alabama Court of Appeals holds, Jones v. State, 101 So., 331, that a question asked a medical witness for the defendant in a shooting case, on crossexamination, as to whether the bullets could have ranged upward if deceased had been standing, was legitimate on cross examination in testing the knowledge of an expert witness.

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Repair of Inoperable Soft Palate by Utilizing the Faucial Tonsils*

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New York

I wish to bring to your notice a method by which, in three otherwise inoperable cases, the resources of plastic surgery were drawn upon to effect, by the use of the adjacent palatal, tonsillar and pharyngeal tissues, a repair of total cleft palate conditions, the result of which was to provide a soft palate that functioned with considerable efficiency. The method is still experimental, but the results justify the expectation that the relief desired can be afforded with increasing assurance of certainty as observation of results conduces to technical improvement. Complete success would, of course, eliminate the characteristic cleft palate deficiency in regard to speech. Notable improvement was effected in the three cases described.

The palate as you know is a mucomuscular fold. The fact suggests, when the palate is absent, the use of like materials, if such are available, for its replacement. Such materials are present in the adjacent muscular and faucial tonsil areas. The problem consists in utilizing the needed tissues to construct a new palate, and still leave the muscles with capacity for exercise of their functions, particularly upon the new palate itself, in the way they would function if conditions were normal.

An essential to success is the provision of an epithelial covering for the areas of excision, to obviate the destructive tendency of the contractures that would supervene if this precaution were not taken.

The function of the palate is to close off, completely or partly, the nasal chambers from the oral pharynx. The exercise of this function is of particular importance in relation to speech, for the palate, like the tongue, the lips and the teeth, has a definite part to play in modifying the fundamental voice sound, originating in the cords of the larynx, differentiating the vowels and consonants, and making possible those modulations which account for the formation of words and hence the habit of articulate speech.

In the enunciation of the nasal consonants (m, n, ng sounds) the normal mobile (soft) palate moves very slightly, if at all, towards the pharynx; whereas in the definition of the mixed nasal and oral consonants (the harsh aspirate sounds of x, k, y, z), the palate approaches the pharyngeal wall. Where the pure tone of the vowels is to be obtained, the palate closes off the nasal cavity altogether, and the sound proceeds through the mouth, issuing from the lips. It follows that when the velum is absent, and the sound from the larynx is not exposed to its control, the tongue, teeth and lips are not able to subject the fundamental tone to all the necessary modulations, and from this failure to differentiate and define there results that inarticulate incoherence unmistakably recognized as the cleft palate defect of speech.

In what concerns deglutition, it is well not to lose sight of the fact that where there is a palate the first action on swallowing consists of pressure of the morsel against the palate by the tongue. The levator and tensor muscles also operate in close coordination with the muscles of the pharynx in effecting the downward passage of the food. Restoration of the palate is therefore distinctly a service in this regard.

In many attempts to cover the defect left in cases of total cleft palate, the membranes of the pharynx, of the tonsil, and over the velar eminence have been utilized. When these membranes were brought up from both sides and joined, there was produced a bar which occupied the place of the palate, and which conduced to improvement in the control of some of the consonantal sounds, but in the rest of the field there was no control, the general result being therefore unsatisfactory. It could not be otherwise, as in this method of repair either allowance was not made for the function of the normal velum or the attempt was not made to extend the mechanism of voice control into that area where it is affected by normal velum.

What was left to be attempted, therefore, was the building up of a soft palate by utilizing the faucial tonsil and the muscles which surround it. In the three cases under review, in which this was done, the patients were all adults. Each of them had already undergone several operations, and had been assured that the relief desired was not procurable. Further resort to the membranes from velar areas was precluded by the circumstance that not enough was left of them to justify the expectation of success.

A study of the anatomy of the soft palate reveals that, of the muscles composing or entering it several have considerable extension beyond the palate, and that most of the fibres are in fact away from it rather

*An address delivered at the New York Academy of Medicine.

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than of it. The most important of these, for the present purpose, are:

1. The palatopharyngeus, a long fleshy fasciculus, forming, with the mucous membrane, the posterior pillar of the normal soft palate. Passing outward and downward behind the tonsil, it joins the stylopharyngeus, and is inserted with that muscle into the posterior border of the thyroid cartilage. Its function is to approximate the pharyngopalatine arches, and to elevate the inferior parts of the pharynx and larynx, thus closing the posterior nares and faucial orifice.

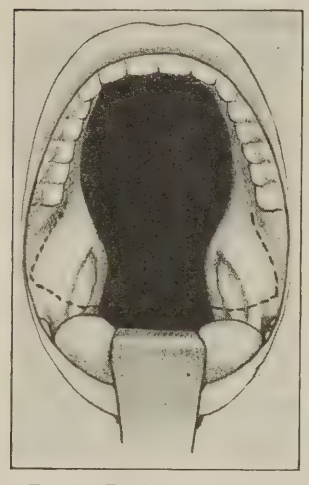

Fig. 1.—Total cleft palate with pharyngeal and tonsillar areas.

2. The palatoglossus—an important muscle this—and a small fleshy fasciculus, arising from the anterior surface of the soft palate next the uvula, forming, with the membrane, the anterior pillar of the soft palate. It passes downward, forward and outward in front of the tonsil and is inserted into the side of the tongue. Its function is to narrow the faucial isthmus and to raise the back of the tongue.

3. The superior constrictor, which rises from the palate bone, the internal pterygoid plate, the pterygomaxillary ligament, the alveolar process of the jaw and the side of the tongue. It is inserted into the posterior median raphe of the palate. It contracts the pharynx, e. g., in the act of swallowing.

4. The salpingopharyngeus, which arises from the eustachian tube and descending blends with the palatopharyngeus. Its function is to raise the nasopharynx.

5. The levator palati, which arises from the eustachian tube and the temporal bone, passes into the pharynx above the margin of the superior constrictor, and, descending obliquely, is inserted into the soft palate as far as the middle line. Its function is to raise the soft palate.

6. The sixth and last muscle which concerns us is the tensor palati, which, arising from the scaphoid fossa at the base of the pterygoid plate, ends by insertion in the palatal aponeurosis, and so may be present in the area of dissection. Its function is to stiffen the palate.

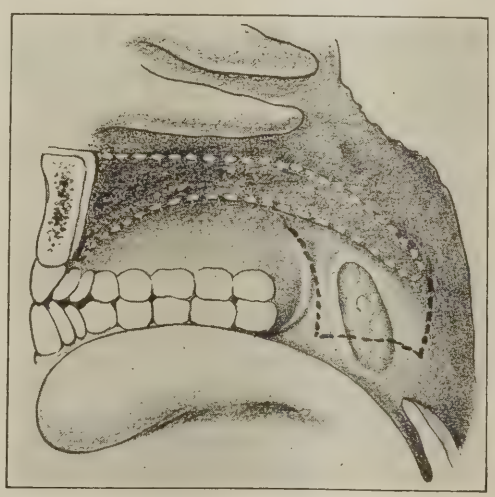

Fig. 2.—Normal palate in white outline; area of replacement flap in black outline.

It is obvious that in the abnormal situation due to the absence of palate, into which all of these muscles except the superior constrictor would be inserted, a considerable amount of distortion must be expected in their relations to the area nearest the palate. To dissect them with accuracy and to fit them into relations which would restore their functions completely would be too much to expect. But where they are all included in the muscle flap of which the new palate is made, it is not too much to expect that their functions will be stimulated to a percentage of efficiency.

These muscles, lying in the same field, present to the surgeon an opportunity for separating from the surfaces of the pharynx and tonsillar areas, on both sides, amounts of tissue adequate to form a substitute for the missing velum. A goodly portion of the faucial tonsil is brought up with the muscle, to give greater bulk to the palate, and also with a view to providing some substitute for the uvula. The flaps so separated are swung up to the median line, the distal ends are joined, and the palate so formed is connected with the important muscles, especially the palatopharyngeus.

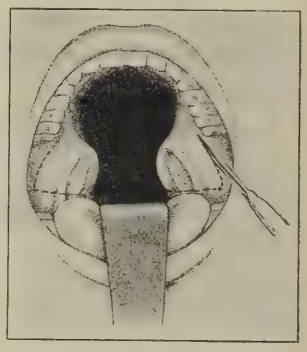

Fig. 3.—Initial incision.

In time the palate so constructed establishes functional relations with the contiguous muscles, and once this occurs the new organ responds to the natural demand upon it as a normal constituent in the economy of the mouth and throat.

In the procedures for lifting these flaps of muscle and tonsil the bleeding is likely to be severe, and ample precaution must be taken to ensure adequate control.

It will be remembered that the tonsils are in relation with five sources of arterial supply. 1. The ascending pharyngeal branch of the external carotid; 2 and 3, the ascending palatine and the tonsillar branches of the facial; 4, the tonsillar branch of the dorsalis linguæ; 5, the descending palatine branch of the internal maxillary. Some anatomists claim also the presence of a small twig from the meningeal. Ordinarily these branches are small, but sometimes they are large and may cause troublesome bleeding.

If the bleeding is arterial the bleeding points should be identified, clamped and tied. This is best accomplished by the use of a long curved hemostat, which has recently been put on the market, the inventor being Mr. H. Bedford Russell, of London. For the general ooze, which is usually venous, but may be from the small arterials, pressure is exerted in the faucial cavity by the use of gauze or the moulded stent; or the pedicled tonsil may be reinserted and held in place until the bleeding is controlled.

If the arterial bleeding is smart and the bleeding points are not identified, pressure is applied to the

carotid artery, using a key or other blunt instrument, externally to the neck, as the full blood supply of the tonsil is from that artery. This facilitates a closer inspection and the identification of bleeding points. Release of the pressure will indicate whether all have been cared for.

If the tonsils are diseased, should it be considered a

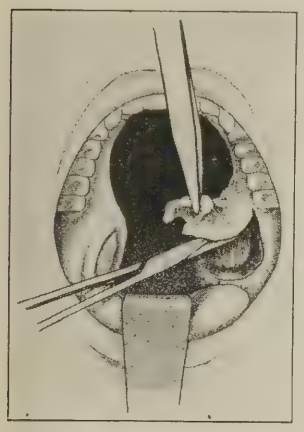

FIG 4.—Flap lifted after deep separation.

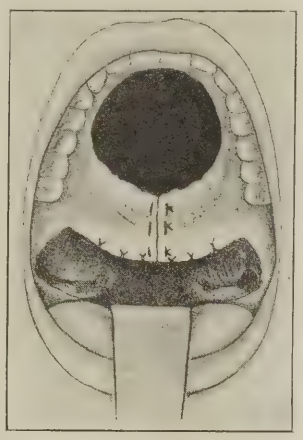

FIG. 5.—Flap joined, forming soft palate.

contraindication? In one of the cases under review the tonsils were infected. It was a question whether one should risk including such material in the flaps, but the condition made it desirable to take the risk, and as it turned out the portion elevated became normal in its new relation, whereas the portion left *in situ* continued infected and subject to inflammation.

Where the tonsils have been excised, it should not be regarded as a contraindication. The muscle flap can still be brought up, but it will not make quite as good a palate. In the three cases here described the tonsils were present.

The upper point of the incision is well above the superior horizontal line of the faucial tonsil. The incision is carried well toward the cheek, thence directly downwards across the tonsil, to include its upper two thirds, then backward over the posterior pillar, to include about a quarter of an inch of the pharyngeal membrane, then up to a level with the original point of incision. The edges of the flap to be brought up are thus outlined. The muscle, membrane and tonsillar tissue within these borders is then deeply separated, by the use of a long semicurved scissors with blunt ends.

The flaps are now drawn up for suture along the median line.

Beginning at the back, the needle enters about an eighth of an inch back from the free membranous border, and is then carried back until it includes a generous portion of the muscular filaments which form the posterior pillar. It is then brought out and carried to the opposite side, where the order is reversed, the needle first entering the muscles of the posterior pillar, then forward to the membranous border and out. The suture is now tied, thus forming the first stay of the palate in its new position. The tonsillar materials from the two sides are joined with three mattress sutures, the membranes of the anterior pillars are brought together in the same way as those of the posterior areas, the suture passing through the palatoglossal muscle to establish the stay on this side.

The surface of the new palate is now established by bringing together, underneath, the membranes from front and back, which are joined with several horsehair sutures.

These procedures are carried through under combined local and general anesthesia. Novocaine, one per cent. solution, is used for blocking the local nerves. General anesthesia is obtained by intertracheal insufflation of ether. The local blocking affords a relief to the brain from the afferent impulses that may otherwise conduce to shock and exhaustion, while the insufflation method permits the packing of the larynx with gauze, thus preventing the passage of blood into the lungs. By this method, also, the amount of ether to be used can be most accurately controlled.

Attention must now be given to the raw areas, which if left to heal of themselves would develop contractures destructive of the newly formed palate. Since they cannot be left to epithelize of themselves, the recourse is to supply a lining by means of a Thiersch graft.

Previous to the operation, the patient is referred to a dentist, who makes, and attaches to the upper teeth, a denture so designed that it will allow free control of a movable bar, at the other end of which is a splint to carry a moulded stent.

With the heated modelling compound attached to this splint a mould is taken of the raw area to be covered. Over this mould, when it has cooled, the Thiersch graft is placed, raw surface uppermost. The graft is made large enough to overlap the back of the stent; there it is sutured or tacked into position. Then, by moving the bar, it is brought into the desired position, the graft now being in contact with the raw area.

This has to be done for both sides. The denture will therefore provide for two movable bars, two

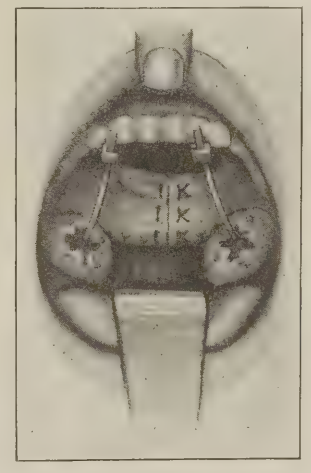

FIG. 6.—Thiersch grafts held in place by moulded stents over denuded areas.

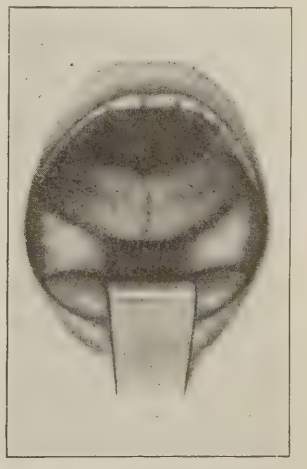

FIG. 7.—New soft palate in place; hard palate later replaced with obturator.

stents, and so for two Thiersch grafts, one for each side.

The Thiersch graft is cut from the inner aspect of the right leg, in the nonhairy area.

The graft is held in position for from eight to ten days, after which it is removed. Nothing is allowed

to enter the mouth for three days after removal of the stent. This gives a chance for any raw area to epithelize. In time contractures may develop, but not to such an extent as to injure the newly made palate.

Two or three days before the operation, the mouth is thoroughly cleansed, the teeth with ivory soap four or five times a day. Witch hazel is used as a gargle. Suction is applied daily to the faucial tonsil to remove any infected debris that has collected in the crypts.

A day before the attempted repair an Einhorn duodenal feeding tube is inserted through the nostril, and passed down through the esophagus and stomach to the duodenum. It is obvious that nourishment cannot be given by the mouth, and this method is better than per rectum.

The diet consists of 240 c. c. of milk, one raw egg and fifteen grams of sugar of milk, well mixed and beaten, administered at blood temperature. The flow through the tube is sustained by the use of a large glass syringe. The food is given every two hours from 8 a. m. to 8 p. m. At intervals during the day a small amount of water is given slowly. Physiological salt solution is injected per rectum by the Murphy drip method; 350 c. c. in the morning and again in the late afternoon. The first two or three days the patient is restless and uncomfortable. To curb this condition one quarter grain codeine sulphate, frequently given, is allowed to dissolve under the tip of the tongue, this being equivalent to hypodermic injection. The mouth is kept rigidly clean, the nurse swabbing at frequent intervals with one of the several mouth washes. Weak solution of potassium permanganate is to be recommended. The nurse will also scrub the teeth several times daily with ivory soap. If the patient becomes constipated it is well to inject through the tube a little magnesium usti, as much as will cover the tip of a knife.

This treatment continues until three or four days after the removal of the stent.

In the cases treated the temperature never rose above 101°, and this was only temporary.

The defect in the hard palate remains to be dealt with.

In the three cases cited, obturators were applied. It would be feasible, however, to use full thickness skin, to the under side of which a lining had been applied by Thiersch grafting. This has been demonstrated by Coughlin of St. Louis. It was suggested to one of the three patients, but he was content to have the obturator and be relieved of further surgical procedures.

Where the palate has been replaced, as in the operation described, the patient should be recommended to an expert in speech training; the results are both immediately and permanently better than if the patient tries to work out unaided his system of vocal production.

636 Fifth Avenue.

A Further Study in Blood Chemistry and the Results of Ultraviolet Ray Therapy in Certain Tuberculous and Other Cases*

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Boston

In a paper read before the Academy of Physiotherapy in New York City in September, 1924, in which the use of physiotherapy in the treatment of tuberculosis was discussed, and in which was included a report on certain laboratory findings made under my supervision for the purpose of determining the probable physiological action of the ultraviolet rays on blood chemistry, the following tentative conclusions were presented:

1. That, in most instances, the action of the rays nas a tendency to increase the calcium content of the blood in those exposed to their influence. This conclusion coincides with the opinion of other investigators.

2. That, where exposure is continued over a considerable length of time, marked pigmentation and thickening and scaling of the skin usually takes place.

3. That, in those cases where pigmentation, thickening and scaling of the skin take place, the hemoglobin of the red blood cells is usually decreased, but that the red cells have a tendency to increase in number, thus maintaining a balance in the physiological function of the blood.

4. That pigmentation of the skin results from elements deposited in it from the hemoglobin, and that pigmentation and thickening of the skin is nature's method of defense against undue blood chemistry changes in those subjected to prolonged exposure to ultraviolet ray influence.

5. That the coagulation time of the blood is decreased in those exposed to the ultraviolet rays, which is undoubtedly due to an increase in the calcium content of the blood. This is of particular interest in cases requiring operation, or where hemoptysis may occur.

6. That the use of radiant light and heat should be avoided in tuberculous patients, either before or after ultraviolet ray exposure. Heat stimulates general and lymphatic circulation, and promotes metastasis. It also has a tendency to break down protecting adhesions. Personal observation has shown this to be true.

7. That the treatment of tuberculous sinuses by means of the water cooled quartz lamp, in socalled surgical tuberculosis, is usually of little permanent benefit. This is due to the limited and local action of the rays, coating of the rod applicators by the discharges from the sinuses, and also due to the fact

*Read before the Academy of Physiotherapy, Atlantic City, May 25, 1925.

that the disease at this time is more constitutional than local. In these cases the general application of the rays from the air cooled lamp has given me far better results, and with less trouble and less discomfort to the patient. The water cooled lamp has been found efficacious in many cases of superficial ulcer, whether tuberculous or otherwise, the pressure method being used, with an initial exposure of one to two minutes, as the case seems to indicate, a local reaction from the exposure being the objective sought. The surface of the ulcer should first be made clean and dry.

8. That, in the treatment of adult tuberculous patients by heliotherapy, discriminating care should be used with reference to the intensity of the treatment and the general effects of the sun's heat upon the circulation and the patient's general condition. Differentiation should also be made between heliotherapy and out of door life. Altitude and latitude should also be considered.

Recent and further laboratory examinations, which I have had made in connection with ultraviolet ray influence on blood chemistry, have served to strengthen the conclusions referred to, and to lead me still further along the same general lines of thought. In this connection, I have come to feel that in advanced life, where cardiovascular changes have taken place, and hypertension is manifesting itself, the use of the ultraviolet rays may be inimical to the patient's welfare, and that, before such treatment is instituted, a careful blood chemistry examination should be made. If the calcium content of the blood is found above the normal, it is my belief that ultraviolet ray therapy in contraindicated. The average normal calcium content appears to be about 11 mgs. to 100 c.c. of blood serum, although 10.5 to 11.5 mgs. may be considered within the normal range so far as therapeutic indications are concerned.

Reasoning along similar lines, it would appear that ultraviolet ray therapy may be beneficial in certain cases of acidosis where the normal alkali base of the system is disturbed on the negative side.

Some writers maintain that the lymphocytes are increased in those exposed to the ultraviolet rays. My investigations, thus far, have not led me to this conclusion. Individual cases sometimes show this tendency, but the cause is apparently due to the underlying pathology rather than to ultraviolet ray influence. Tuberculous patients usually show a leucocytosis whether exposed or not exposed to the ultraviolet rays.

The blood nitrogen and uric acid in these cases are usually high during the period of hospitalization; but this is the result of the physical inactivity which is enjoined upon patients as a part of their treatment, and indicates a lowered nitrogenous waste elimination resulting from lessened metabolism, rather than ultraviolet ray action on blood chemistry. When this condition becomes troublesome and toxic symptoms manifest themselves, I have found that mild autocondensation treatments are frequently of benefit if given in alternation with ultraviolet radiation. These treatments should not exceed 150 to 400 milliamperes, given for a period of twenty minutes. The patient's physical condition should serve as an index of the intensity of the treatment, but in no case should the intensity be great enongh to render the patient conscious of increased body heat. This prevents harmful lymphatic stimulation.

Undoubtedly, other blood chemistry changes take place under ultraviolet ray influence which serve to affect the physiological processes of the body. This is particularly true of the phosphorus bearing elements, but, thus far, I have not been able to investigate this field. From experience and observation, however, I feel convinced that in many cases, where there is an excess elimination of the phosphorus compounds, that ultraviolet ray therapy will help in correcting the condition.

The blood chemistry changes resulting from ultraviolet radiation take place principally in two ways: First, through absorption of radioactivity from the rays by the red blood cells while circulating near the surface of the body upon which the rays are falling, and thus, by means of those cells and the blood stream, carrying radioactivity to the cells, and in this manner stimulating or inhibiting the hormone function of certain glandular structures, as the case may demand. Second, through the influence of the rays upon the cutaneous nerve endings, the sympathetic nervous system, through reflex action, is undoubtedly caused to play a part in the automatic regulation of the physiological activties of the laboratories of the body. In both cases the ultimate results appear to influence physiological processes rather than directly influencing the blood itself. These processes are probably analogous to those which take place in the chlorophyl of the leaves of plants, shrubs and trees when they are exposed to the ultraviolet rays given off by the sun.

Under favorable conditions, the bactericidal effect of the ultraviolet rays is marked. Tests made by the Bureau of Standards are reported to have shown that the bacterium coli communis may be destroyed in one second of time when exposed to ultraviolet radiation from a quartz mercury vapor lamp at a distance of six inches. An increase in the distance requires a longer exposure. The water cooled lamp, with its shorter wave length, gave the most pronounced action. In the tests referred to, it is reported that the destruction of the bacteria was proportional to the total exposure, whether given continuously or intermittently.

Scientists state that, were it not for our atmosphere, the ultraviolet radioactivity given off by the sun to the earth is of sufficient power to cause disintegration of all of the earth's minerals within a comparatively short time. Radium is an illustration of such change going on constantly.

Fortunately, the modifying influence of the atmosphere not only prevents undue radioactivity from the ultraviolet rays of the sun, but modifies their physical action so that they perform constructive as well as destructive work. Were is not so, life would disappear from the earth. Vegetable and animal life is a good illustration of the constructive influence of the ultraviolet rays, and of the modifying conditions governing their activity, and shows how well the machinery of the universe is balanced in its efforts to carry on its eternal programme.

But, these modifying conditions are more or less unevenly distributed, and subject to other physical conditions. Clouds, altitude, latitude and longitude all modify the sun's ultraviolet ray activity. Heavy

clouds and common glass prevent their passage. Higher altitude increases their intensity. Varying latitude and longitude increase or decrease their relative activity, depending upon the angle of incidence at which the rays fall. At high noon their influence is greatest. At the equator their influence is direct. To the north or south of the equator their influence will be modified by the angle at which they traverse the atmosphere. This variability in the modifying influence of ultraviolet ray activity accounts largely for the black and brown skinned races of the tropics, and also for the fair skinned races of the temperate zones. It also accounts for many types of animal and vegetable life and their distribution over the earth.

Despite nature's plans, man frequently tries to alter conditions to suit his necessities or desires, and sometimes both. But, when he departs too far from established standards he suffers in consequence. This is particularly true when fresh air and sunshine figure in the equation.

With the discovery of a process for fusing quartz glass, the mercury vapor quartz lamp, both air cooled and water cooled, became possible. At the present time satisfactory models of both types may be obtained from several American manufacturers, and through the therapeutic use of these lamps, ultraviolet ray deficiency may be largely corrected, when intelligent use is made of them for this purpose.

When these lamps were first put on the market their use was often disappointing to both physician and patient, and they came to be regarded with scepticism by a majority of the conservative members of the profession. Even now this attitude is maintained by many. The fault in the beginning was not so much that of the lamps as it was of other factors. Inexperienced enthusiasts and a lack of a proper understanding of the physiological action of the ultraviolet rays were the cause of the larger percentage of failures. Scientific investigation and experience are rapidly changing this state of affairs and are now giving to the lamps their proper place in therapeutics. The empirical use of these lamps is no longer necessary and should be avoided. One should not heed the statements which we often hear that their overuse can produce no real harm. Blood chemistry investigation shows such statements to be untrue.

Were it not for the work involved on the part of laboratory technicians, and the expense to patients in private practice, the ideal way to use ultraviolet ray therapy would be to have a blood chemistry examination made in as many cases as possible before treatment is instituted, and, later, at such intervals as seem necessary in order to check up results. This procedure would prevent many failures.

If pigmentation of the skin is progressive, as a result of ultraviolet ray exposure, it is an index of defense on the part of nature against excessive blood chemistry changes. If pigmentation does not take place after a considerable period of exposure one may rest assured that blood chemistry changes are more or less immaterial and may be disregarded. Pigmentation, therefore, may be used as a partial guide in this respect. A blood count will also help.

Acting along the lines suggested by the laboratory findings referred to, it is now my practice to begin ultraviolet ray treatments by an initial exposure of one half minute to each zone of the body, dividing it into four zones, upper and lower and front and back. This includes the trunk and legs. The eyes should be properly protected, either by colored goggles, or by black paper or pads of gauze or cotton. The average distance of the burner from the surface treated should be about thirty inches in most cases. Each subsequent treatment is increased one half minute to each zone until exposures of five minutes each are given to each zone, or a total of twenty minutes to the entire body. These treatments are given daily, until pigmentation begins to appear, then a change is made to three times weekly, and in some cases the time period reduced to three minutes to each zone. In doubtful cases a blood chemistry examination is made for determining more accurate results. In the case of tuberculous patients, the chest is covered if the condition involves the lungs. This is done to satisfy the minds of doubting tuberculosis specialists, rather than from fear of harmful results.

To illustrate some of the points which I have aimed to bring out in connection with ultraviolet ray therapy, I have summarized the clinical data, and in some instances the blood chemistry laboratory findings, of a few rather interesting cases which have been treated under my supervision during the past six to twelve months, and they are herewith included.

In Cases I, II and III the patients each had tuberculous ulcers in or about the mouth and were treated by the ultraviolet rays from a water cooled quartz lamp. The pressure method was used, beginning with a half minute exposure and increased one half minute daily until reaction occurred. When reaction occurred the treatment was suspended until the acute manifestations had subsided, and then resumed. In some cases reaction took place after the first treatment. In Case I, the patient had a lesion at the left canthus of the lips. At the end of nineteen treatments, all given within one month, the lesion was entirely healed and has remained healed for over eight months. In Case II, there was a lesion at the right canthus of the lips which yielded to fifteen treatments, and has remained healed for several months. In Case III the patient had a lesion on the under surface of the tongue. Healing took place after eleven treatments, and has remained healed for over six weeks.

Case IV.—This patient received treatment from the air cooled quartz lamp over the entire body, beginning with one minute exposure to each of the four zones, and increasing one minute, daily, until ten minute exposures were given to each zone, and were thus continued until twenty-three exposures had been made. The patient had pulmonary tuberculosis, moderately advanced, but without toxic manifestations. The object sought was the reduction of the coagulation time of his blood, preparatory to operation for the removal of his tonsils. He had previously been given calcium lactate by mouth, but unsuccessfully. After two ultraviolet ray exposures his coagulation time was nine and one half minutes. After eight exposures the time had dropped to four and one half minutes, at which average time it remained until the operation. During the operation

he lost less than one dram of blood. The patient stated that he felt better, physically, after the first exposure to the ultraviolet ray.

Case V.—This patient was a colored man, aged thirty-nine. He was in France during the war and had influenza while there. He returned home in July, 1919, and suffered nervous collapse on the way. He went directly to the hospital on arrival, and later he left the hospital and went to work as captain of bell boys in a city club. His normal weight was 130 pounds. After having been at work for some time he began to lose weight, a cough developed, with night sweats and general physical weakness. In July, 1924, he was hospitalized, with a diagnosis of pulmonary tuberculosis. His weight at that time was 108 pounds. On Labor Day he was transferred to our hospital, and later referred to the physiotherapy department for ultraviolet ray treatment. His weight was then 100 pounds when treatment was begun. Previous to his transfer eczema about the face and eyes had developed, and later in the ears and back of the ears. Abscesses had also developed in the ears. There was general excoriation in and about the ears, which was intensely itchy, and accompanied by an irritating discharge and encrustation. Altogether, he presented about as hopeless a condition as one would care to treat with the expectation of accomplishing favorable results.

Treatment was begun with the air cooled quartz lamp; distance twenty-four inches; time, one minute to each side of the head, and increased one minute, daily, until ten minute exposures were given to each area. Improvement began from the first. On January 16th of this year, the ears and face were so much improved that his treatment was changed to three times weekly, and mild autocondensation treatments for his general metabolism were added on alternate days. These treatments were twenty minutes in duration, and a current strength of 400 milliamperes was used. His weight and general condition continued to improve. On February 1st, herpes zoster appeared over the central portion of the right side of his chest. This lasted for about three weeks, but gave him no discomfort. The treatment was not changed, except that general ultraviolet ray treatment to the whole body was given in place of the local exposure; but this change had already been made on March 4th. On May 1st, the patient was discharged from the hospital for home treatment. At this time his general condition seemed excellent; weight, 124 pounds; skin clear, and the pulmonary condition appeared to be arrested. On February 26th, a blood chemistry examination was made and showed: calcium, 11.3 mgs.; blood nitrogen, 39.9 mgs.; uric acid, 2.4 mgs.; blood sugar, 171 mgs.; red cells, 4,590,000; while cells, 9,800; lymphocytes, 49; hemoglobin, 85 per cent. No blood examination was made before treatment was begun. This case showed an increase of the lymphocytes, a count of 25 being the normal average.

Case VI.—This patient was an ex-service man suffering from pulmonary tuberculosis, moderately advanced. He had been hospitalized for over one year and had received general ultraviolet ray treatment during a greater part of the time, averaging three treatments weekly. His case is now apparently arrested, and he has gained over twenty pounds in weight. On May 15, 1924, he showed a blood calcium of 11.75 mgs. On April 25, 1925, a blood examination showed, calcium, 12 mgs.; hemoglobin, 80 per cent.; red cells, 4,780,000; white cells, 11,800; lymphocytes, 25; coagulation time, one and one half minutes; blood sugar, 68.2; blood nitrogen, 38.4; uric acid, 2.5 mgs. At this time his treatments were changed to twice weekly, and the exposure time reduced to three minutes to each zone. The pigmentation is slight.

Case VII.—This patient was also an ex-service man, suffering from advanced pulmonary tuberculosis, semiambulant. He was referred for treatment of acne vulgaris on the back and upper part of the chest, pustular type, exaggerated in character. The first treatment from the air cooled quartz lamp was given on February 12, 1924; time, two minutes, distance, thirty inches. The exposure of two minutes was for the purpose of obtaining a first degree reaction, or erythema of the skin. Subsequent exposures were increased one minute each until fifteen minute exposures were given. The treatment was then changed to three times weekly, and high frequency vacuum tube treatments were given over the affected area on alternate days. Marked improvement took place, not only in the acne eruption, but in the patient's general condition. On the last day of the year (1924) the ultraviolet ray treatment was changed to include the entire body, except the chest, three times weekly, five minute exposures to each zone, and autocondensation treatments were given on alternate days, 200 milliamperes, twenty minute treatment periods. The patient's condition continues to show improvement, and his pulmonary condition seems to be arrested. His skin has been free from acne eruption for several months. At no time has he shown pigmentation of the skin, although he is a blond of decided type. A blood examination was made on April 14, 1925, and showed the following results: calcium, 10.5 mgs.; blood nitrogen, 34.4 mgs.; uric acid, 2.4 mgs.; blood sugar, 74.6 mgs.; coagulation time, 5 minutes; red cells, 4,440,000; white cells, 21,000; lymphocytes, 28; hemoglobin, 80 per cent. At the time when his treatment was changed to autocondensation the vacuum tube treatment was discontinued.

Case VIII.—This patient, an ex-service man, was suffering from advanced tuberculosis and removal of tuberculous left kidney. He was referred for treatment about three months after the operation. On April 14, 1925, treatment was begun from the air cooled quartz lamp with an initial exposure of one half minute to each of the four zones of the body. Subsequent treatments were increased one half minute daily, until five minute exposures were given to each zone, burner—body distance, thirty inches. After the maximum of five minutes was reached the treatments were changed to three times weekly. Improvement has been constant. The sinus over the operated area is gradually closing, and the discharge is lessening. The patient first came for treatment, from the ward to the physiotherapy department, in a wheel chair. After three weeks he walked to the department for his treatments. He is now receiving open air and heliotherapy treatment. This patient has not suffered material loss of weight. At the time he was referred for ultraviolet ray treatment a blood ex-

amination was made and showed the following: calcium, 11.0 mgs.; blood nitrogen, 32. mgs.; uric acid, 3.9 mgs.; blood sugar, 122 mgs.; red cells, 4,010,000; while cells, 11,000; lymphocytes, 19; coagulation time, 4 minutes; hemoglobin, 85 per cent.

Case IX.—This patient was suffering from tuberculosis, including multiple tuberculous sinuses of the forearms and a tuberculous right mastoid, which latter had been operated upon. He was referred to the physiotherapy department for general ultraviolet ray treatment on November 18, 1924. He came in wheel chair.

At Easter time of this year he went on a five days' pass, which is an indication of his general improvement. All sinuses, except that of the mastoid, have healed, and the mastoid sinus is slowly closing and granulating from the bottom. He has increased about six pounds in weight. On April 25, a blood chemistry examination was made and showed: calcium, 11.4 mgs.; blood nitrogen, 34.5 mgs.; uric acid, 2.5 mgs.; blood sugar, 81.3 mgs.; red cells, 4,840,000; white cells, 11,600; lymphocytes, 25; coagulation time, three minutes; hemoglobin, 85 per cent.

Ultraviolet ray treatments were administered in a manner similar to that employed in Case VIII, except that after he was placed on three treatments a week (general treatment) he was also given three other treatments weekly, locally over the mastoid; duration, three minutes; distance, thirty inches.

Case X.—This patient, an ex-service man, had been hospitalized for some time, suffering from general tuberculosis. He was referred for ultraviolet ray treatment on April 12, 1924. He had a tuberculous sinus in the lower dorsal region. Since treatment with utraviolet rays was instituted improvement has been continuous. Patient now in fairly good condition, sinus nearly healed. Blood examination, April 24, 1925, shows: calcium, 11.0 mgs.; blood nitrogen, 37.5 mgs.; uric acid, 2.7 mgs.; blood sugar, 61.3 mgs.; red cells, 4,628,000; white cells, 8,800; lymphocytes, 15; coagulation time, three minutes; hemoglobin, 85 per cent. Treatment technic similar to that of Cases 8 and 9.

Case XI.—This patient, an ex-service man, was suffering from pulmonary tuberculosis and multiple tuberculous sinuses of the forearms. He was referred for ultraviolet ray treatment on April 14, 1925. The same technic was used as in Cases VIII, IX and X. At the time treatment was begun a blood chemistry examination was made, and showed: calcium, 9.5 mgs.; blood nitrogen, 28.1 mgs.; uric acid, 2.25 mgs.; blood sugar, 147; red cells, 3,390,000; white cells, 13,400; lymphocytes, 24; hemoglobin, 80 per cent.; coagulation time, three minutes. After six weeks' treatment the sinuses are practically all healed.

Case XII.—This was a bed patient, suffering from pulmonary tuberculosis, far advanced. General ultraviolet ray treatment from the air cooled quartz lamp was begun on January 5, 1925. The technic was as previously outlined. This patient also was suffering from tuberculous laryngitis. Improvement began to manifest itself from the first. His weight increased, and his voice showed marked improvement (May 25, 1925). On April 25th a blood chemistry examination was made and showed: calcium, 11.6 mgs.; blood nitrogen, 38.7 mgs.; uric acid, 2.6 mgs.; blood sugar, 94.3 mgs.; red cells, 4,740,000; white cells, 8,200; lymphocytes, 14; hemoglobin, 80 per cent.; coagulation time, 4 minutes.

Case XIII.—This patient, an employee, aged seventy-five years, manifested a severe attack of eczema of both hands, which was most uncomfortable and irritating. Both hands were swollen, dry, cracked, bleeding easily, and extremely itchy. Treatment from the air cooled quartz lamp was instituted, time increased to ten minutes, daily, and preceded by radiant light and heat for ten minutes for softening the crusts.

At first this treatment relieved the condition materially, but failed to effect a cure. Later, the hands became worse, and diathermy to the hands was tried, the hands in a tub of water attached to one pole of the high frequency machine and the other pole attached to a cuff around the arm above the elbow. This method of treatment was instituted as the patient gave a history of having at one time frozen his hands, and the circulation through them seemed rather sluggish. This treatment did not relieve the condition permanently, and the treatment was changed to autocondensation, three times weekly, 800 milliamperes, time, twenty minutes. He was also advised to refrain from work. Improvement was shown almost immediately, and at the present time the hands are normal in appearance, and are giving but little discomfort. Ultraviolet ray therapy was discontinued after a blood chemistry examination was made, on March 14th, which showed: calcium, 12.8 mgs.; blood nitrogen, 36.2 mgs.; uric acid, 3.6; blood sugar, 160 mgs.; red cells, 4,130,000; white cells, 11,000; lymphocytes, 41; coagulation time, four and one half minutes; blood pressure, 150 mm., systolic; 90 mm., diastolic.

Case XIV.—Employee, aged fifty-nine years; calcium, 11 mgs. No treatment.

Case XV.—Employee, aged sixty-five; blood pressure, systolic, 220 mm.; diastolic undetermined; blood calcium, 12.4 mgs. No treatment. Examination was preliminary to employment. The same was also true of Case 14.

CONCLUSION

In connection with these cases, the usual routine hospital treatment was continued, as indicated, during the period of ultraviolet ray exposure. In most instances they had failed to respond satisfactorily until ultraviolet ray therapy was instituted, which renders the results the more striking. Many more cases could be mentioned in which equally favorable results have been obtained; but, as their general characteristics would be somewhat similar, it would be more or less a repetition, and therefore, seems unnecessary.

Miliary Calcification in the Lung.—Charles G. Sutherland (*Medical Clinics of North America*, January, 1925) states that miliary calcification of the lung is a distinct pathological condition. The lesions are characteristic calcified spots, discrete, round, and having a marked absorptive power for the röntgen rays. These spots are widely distributed throughout both lung fields, but are seldom seen above the anterior level of the first rib.

Treatment of Fracture of the Femur

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Two papers on the treatment of transcervical fracture of the neck of the femur which have appeared recently (1) seem to merit comment because of the contrasting conclusions which they present. The first is by Professor Koenig, of Würzburg, who subscribes to the opinion of Cooper and Kocher that a complete fracture of this type is practically incapable of repair. This conclusion is, he states, supported by the investigations of Nussbaum on the circulation and the study of specimens by Bonn, Schmol, Hesse and Gurlt, which indicate that necrosis of the head and absorption of the neck are the almost inevitable sequence of the injury, and that even in the possible event of union, arthritic changes in the joint would cause functional disability.

For these reasons Koenig advocates not only removal of the head predestined to necrosis, but with German thoroughness, the neck also in order to forstall its absorption. The projection of the trochanter having been cut away an ovoid extremity is formed, which when placed in the acetabulum assures secure support. He states that with the aim of improving function, he has on the cadaver, though not as yet on a living subject, transplanted the trochanter to the outer side of the shaft, as in the reconstruction operation, of which, apparently, he has never heard (2).

The companion paper is by Professor Anshütz and Dr. Bortwich, of Kiel. They reject primary operation and the conclusions on which it is based because by the abduction treatment a satisfactory result has been attained in four fifths of the cases, and citing similar results reported by others, remark that actual experience is far more valuable than theory. Their material, limited to transcervical fractures, comprises fifty-one cases, personally investigated. Thirty-seven of these were treated by various methods with but little variation in the results which were considered satisfactory in thirty-three per cent. of the cases. The remaining fourteen were treated by the abduction method with satisfactory results in seventy-eight per cent. It is further stated that in only ten of these was the full Whitman technic, including verification of the apposition of the fragments by x ray examination, employed, and that in this group the result was satisfactory in ninety per cent. In their classification a good result is essentially an anatomical and functional cure, satisfactory if the patient can walk half a mile without support, bad if canes or crutches are required in locomotion. From this viewpoint the comparison is even more striking. In the thirty-seven cases treated by conventional methods there were but two good results (5.4 per cent.). In the fourteen cases treated by the abduction method there were eight good results (fifty-seven per cent.), and in the ten cases referred to seven good results (seventy per cent.).

The evidence that has accumulated since the abduction treatment has come into more general use has demonstrated that in the larger proportion of these cases repair is both possible and probable. In many instances a certain loss of substance occurs, but this does not prevent repair if the fragments are fixed in contact for a sufficient time. If, however, nails or screws of bone pegs have been inserted the fragments, in the event of absorption, will be held apart and union prevented by the means intended to assure it.

It may be recalled that Sir Astley Cooper, cited as an authority by Koenig, admitted that the primary cause of nonunion of the intracapsular fracture as of the patella was the impossibility of apposing the fragments, and the mechanical inadequacy of conventional methods to assure the opportunity for repair, is the actual basis of the teaching that this fracture is from the therapeutic viewpoint an exception to all the other injuries of its class. The most notable example of this is the bugbear of impaction which must on no account be disturbed. Originally the diagnosis of impaction was dependent upon interpretation of the physical signs and, usually at present on a misinterpretation of x ray pictures. Its actual influence on the result is well illustrated by the statistics under consideration. In twenty-four of the thirty-seven cases treated by indifferent methods the fracture was classed as impacted and yet there were but two good results.

Deformity after fracture of the neck of the femur, whether the fragments are apposed or not, indicates separation of the fractured surfaces, and contact which in this instance is essential to repair can be restored only by its correction.

If Koenig's statement that intracapsular fractures were incapable of repair were generally accepted there would be, practically speaking, in the future as in the past, no treatment for cases of this class since primary operation would be practicable in but few cases. Furthermore, the larger proportion of fractures at the hip are near the base, yet in this class in which there has been little question of repair, function, in the sense of primary correction of deformity and adequate after care, has been utterly neglected.

The first essential for progress therefore is to discard all the teaching of the past, which, because it is based on inadequate treatment, serves no purpose other than to uphold incompetence and neglect.

Fracture of the neck of the femur should be treated like other fractures with the aim of assuring the opportunity for functional repair and since there is but one method adequate to correct resistent deformity and to fix the fragments securely, a method which is from the life saving standpoint far more conservative than neglect, and when properly applied, far more comfortable than any treatment that enforces dorsal recumbency, the actual question at issue is of the competence of the surgeon to apply it.

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The Whitman Reconstruction Operation on the Hip Joint for Ununited Intracapsular Fracture*

With Report of a Case

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The Whitman reconstruction operation for ununited fractures of the neck of the femur has proved beyond doubt a most satisfactory procedure in restoring a painless, stable, weight bearing hip joint. It is especially indicated in those cases where there has been a complete absorption of the femoral neck and rarefaction of the femoral head, which then fills the acetabular cavity practically as a foreign body. The femoral shaft, in these instances, is pulled up by the pelvitrochanteric muscles above the upper acetabular brim and against the side of the pelvis. From a functional viewpoint, this type of fracture is a serious disability. With each step the patient makes, the upper end of the femur either rides up into the fleshy gluteal mass or against the side of the pelvis. Disability and pain are progressive and these patients are naturally doomed to permanent invalidism if this condition remains untreated.

Dr. Royal Whitman, who first described this operation, states that its field of usefulness can be extended to many other conditions of the hip other than fractures, namely, chronic osteoarthritis with considerable limited painful motion or arthritis deformans with ankylosis.

The patient, whose case I am reporting, was in my judgment, a favorable subject for this operation, and the results that have been obtained are extremely gratifying:

Case.—Miss C. D., aged thirty-three, occupation bookkeeper, came to me on May 31, 1924, complaining of pain in the left hip and a marked leftsided limp. She was unable to walk without crutches. Her previous medical history was unimportant. She had always enjoyed good health.

On January 17, 1923, she slipped on the ice, fell, and sustained an injury to the left hip. She was immediately incapacitated and had to be carried to a taxi and then taken home.

She was treated by her family physician, who diagnosed torn ligaments, for a period of six months. At the end of this time, she managed to get around the house on a pair of crutches but could bear no weight on the left side. If she attempted to do so, she felt insecure and had pain. One year after the accident, an x ray was taken in a hospital, where she was told that a dislocation of the hip existed. The only advice given was to have a lift put into her left shoe to compensate for the shortening. During this period, she tried a chiropractor, who administered spinal adjustments. Obviously, the condition did not improve and the girl was becoming resigned to permanent invalidism. She had also been treated by two or three other physicians but without any definite advice.

Examination showed a marked left sided limp, a left postural scoliosis with rotation of the lumbar segment. The pelvis was tilted downward and forward toward the left side. The measurement of the lower extremities showed a shortening of the left limb of three inches. The trochanter was two and three quarter inches above Helaton's line and there was a vertical movement of the femur through a distance of two inches.

A tentative diagnosis of ununited fracture of the neck of the left femur was made.

This was confirmed by a röntgenographic study made by Dr. Mulford K. Fisher, whose report is as follows: Old intertrochanteric fracture of the neck of the femur, with an upward displacement of the shaft on the ilium, a distance of three and one half inches. No evidence of bony union. The head of the femur, which has undergone considerable absorption, is in the acetabular cavity.

The patient was admitted to the Polyclinic Hospital on June 17, 1924. The procedure which I had in mind before performing the operation, was to bring the upper end of the shaft of the femur in better relation to the acetabular cavity, because the femoral shaft was above the normal position, held so by contracture of the iliotrochanteric muscles. To attain this, I applied fifteen pounds weight to the left thigh and maintained it for a week.

A röntgenograph made at this time by Dr. George E. Pfahler showed the following: There is an ununited fracture of the neck of the femur with its complete absorption. The head is rarefied, lies free and fills the acetabular cavity. There is an upward displacement of the shaft of three and one half inches.

On June 29, 1924, the reconstruction operation was performed, following the technic of Dr. Royal Whitman, the steps of which were as follows: An incision was made in the shape of a half U beginning one inch behind the anterior superior spine extending downward and backward, crossing the femur about three inches below the apex of the trochanter. This exposed the interval between the tensor fascia femoris through which the capsule was opened and the head of the femur removed. The trochanter was then cut through at its base and turned upward. The upper extremity of the bone was then rounded off and made smooth. A thin slice of cortical bone was removed from the outer surface of the shaft at its upper end and the trochanter with all of the attached muscles was sutured to the shaft by kangaroo tendon. The upper end of the shaft was then inserted into the acetabular cavity and to maintain its position, the thigh was placed in a position of 50° of abduction. The capsule of the hip joint was closed with an uninterrupted row of sutures and the wound was closed without drainage.

*Read before the Southeast Branch of the County Medical Society, May 7, 1925.

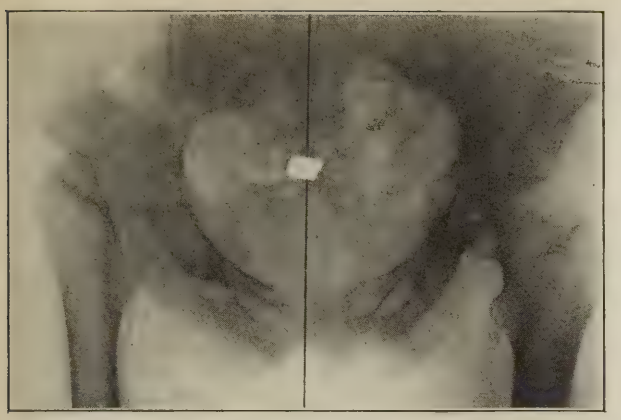

FIG. 1.—Shows the left hip before operation. Note complete absorption of the femoral neck, the upper displacement of the shaft of the femur and the partially absorbed head in the acetabular cavity.

A plaster of Paris cast was then applied, with the hip in the position indicated above, the plaster reaching from the thorax to the toes, the foot pointing straight upward and at right angles to the leg. The duration of the operation was an hour and fifteen minutes, including the application of the cast. The patient bore the operation extremely well and there was no postoperative shock.

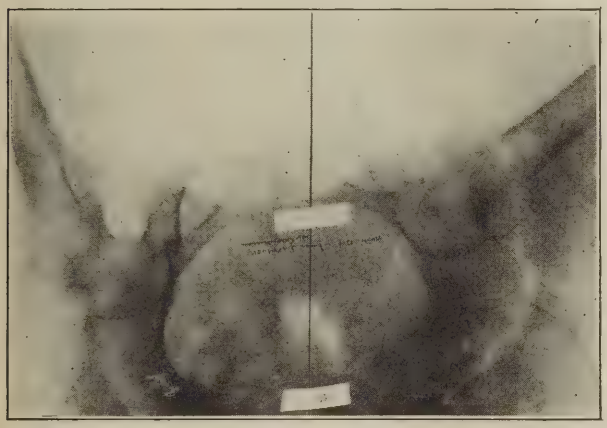

FIG. 2.—Shows the newly formed neck in the acetabular cavity, the thigh in 35° of abduction, the trochanter anchored to the shaft.

For the first three weeks after operation, the pulse, respiration and temperature were normal. At the end of this time, there was a slight rise in temperature and the patient complained of a burning, throbbing pain at the site of the operation.

FIG. 3.—Shows the femoral neck in position.

To investigate this, I made a window in the cast and found that a small, stitch abscess had developed in the upper pole of the wound. This was dressed daily and healed in a week.

The cast was removed at the end of six weeks. The limb was then brought down into 35° of abduction and another cast applied, also from the nipple to the toes. An x ray taken at this time showed the newly formed neck in the socket.

On October 2nd, this cast was removed, and the examination revealed the following: The newly formed neck was apparently in the acetabular cavity. There was no upward movement. The limb was in 35° of abduction with the trunk, and it could be adducted 25°; there was 25° of flexion, extension 0; internal and external rotation 90°; measurement from the anterior superior spine to the internal malleolus showed a shortening of one and one half inches; the knee had a range of motion of 45°.

An x ray taken two days later showed the newly formed femoral neck in the acetabular cavity, and the trochanter anchored in position.

A shoe was made for the patient with a lift of one and one half inches to compensate for the shortening and she was encouraged to bear weight upon the affected side.

For a period of three months she received a course of daily massage and manipulation to the knee and hip.

On January 15, 1925, an examination showed the following condition: Flexion 45°, extension 10°, abduction 40°, adduction 15°, internal and external rotation 90°. The knee flexes to 90°. There was a right dorsal left lumbar scoliosis. The patient was walking without assistance, with practically no discomfort. She was still not able to sit comfortably.

On May 5, 1925, an examination showed the following: The hip could now be flexed to 70°, the knee through an arc of 160°. She could walk some distance without any pain whatever and could sit without discomfort. The only complaint which she had at the time was that she could not stoop to lace her shoe. She was delighted with the results. There was, of course, a perceptible limp.

An x ray examination made May 2nd showed the newly constructed neck of the femur lying in the socket and the trochanter appears solidly attached to the shaft.

According to Dr. Whitman, the operation described can be performed without regard to age limit. This operation would be a great boon to many aged persons. When they sustain such an injury, it is usually considered hopeless and they are left to spend their days disabled and in pain.

It would be certainly a worth while procedure in pathological dislocations following disease in which the articulation has been in part destroyed, assuming, of course, that there is a fairly good acetabular cavity.

In conclusion, I might state that this operation should be given more universal consideration.

2017 PINE STREET.

Hanot's Cirrhosis

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Cases of Hanot's cirrhosis are probably sufficiently rare to warrant the reporting of a single case, especially when it is quite typical in its clinical aspects.

Case I.—H. C. Z., aged twenty-seven, applied for treatment on account of jaundice which had lasted one year, loss of twenty pounds weight in one year, and general malaise for three or four years. The family history showed that the father died at forty-seven from cancer of the stomach. The remainder of the history was negative. He had had the ordinary diseases of childhood of a milder variety, and influenza in October, 1923; no venereal disease. He was a moderate smoker; did not use alcohol.

Concerning the present illness, the patient did not think he had been absolutely well since 1920. At that time he spent a year in the Argentine Republic. During his stay he recalled having had several attacks of moderately severe diarrhea, each one lasting three to four days at a time, and associated with colicky abdominal pain. He passed no blood or mucus in the stools during these attacks, which, by the way, were not sufficiently severe to cause him to discontinue work. There was no noticeable loss of weight. He returned from the Argentine in 1921 feeling fairly well. Not long after his return home he began to notice some indigestion characterized by bloating, belching, and sour stomach, and a slight loss of weight. Early in 1923 he suffered from slight cramp-like pains referred to the epigastrium, unaccompanied by nausea or vomiting. With this indigestion he had some fairly severe attacks of diarrhea, associated with the passage of blood and mucus in the stools. Frequently he had involuntary passages. In the spring of 1923 he went to the Adirondacks where he picked up considerably in health. While there, however, he noticed considerable itching and burning about the feet and legs. In a month's time he noticed a definite jaundice which had gradually deepened since. In October he had influenza. At this time some enlargement of the liver was noted and since then he had suffered considerably from itching. He had had no nausea and no vomiting but a gnawing sensation in the epigastrium. There had been no return of the diarrhea, in fact his bowels were somewhat constipated. Lately his stools had been rather light in color, at times almost a clay color.

The symptoms noted were a slight cough; no expectoration; no circulatory symptoms; nocturia—from one to five times a night; no hesitancy, dribbling, dysuria or hematuria. His sleep was disturbed on account of frequent urination and itching.

The physical examination showed that the patient's development and nutrition were distinctly below par. The skin showed a fairly deep jaundice and the conjunctivæ had a marked icteric tinge. There was evidence of irritation of the skin, probably from scratching. The tongue was moist and clean, the teeth were in good condition, the pharynx clear except for the distinct yellowish tinge. There were some palpable cervical glands, the thyroid was not enlarged.

Nothing abnormal was noted in the respiratory system. The circulatory system was negative except for a slight bulging over the precordium; pulse 72; blood pressure 100/50. The abdomen moved freely on respiration and appeared to be somewhat distended. The umbilicus was pushed up as though from intraabdominal pressure and there was general tenderness over the upper abdomen, but no rigidity. The liver was palpable on full inspiration for about two inches below the costal margin. Its edge was smooth and regular, quite firm, slightly tender. The spleen was also enlarged for about one inch below the costal margin; the splenic notch was readily palpated. There was no evidence of ascites. The abdomen was otherwise negative, no hemorrhoids. An examination of the nervous system showed the pupils equal, regular, and reacting to light and accommodation; knee jerk present and active. The remainder of the neurological examination was also negative.

Laboratory investigation: Urine varied from 700 to 1600 c. c. in the twenty-four hours; specific gravity 1.011 to 1.018; no sugar, no albumin in any specimen; bile pigments present in all specimens; no pus or casts noted. Blood count on admission, red cells 3,760,000, white cells 9,600, hemoglobin 73 per cent. On discharge, seven weeks later, the red cells were 3,820,000, white cells 9,300, hemoglobin 87 per cent. Differential blood count 66 polymorphonuclears, 23 small lymphocytes, 3 large lymphocytes, 2 eosinophiles, red cells varying slightly in size; blood Wassermann was negative; nonprotein nitrogen 26.2 mgms. to 100 c. c. of blood, sugar 100 mgms., uric acid 3.1 mgms.

The examination of the feces gave no reaction for blood or mucus. Bile salts were found in all specimens. The examination of several warm stool specimens revealed no parasites. Gastric test showed mucus in several specimens; no bile. Two specimens showed lactic acid. The fractional gastric curve for the combined acid ranged from ten in the residuum gradually up to thirty-four at the two and one half hour observation. There was no free hydrochloric acid noted except in the final specimen where it was twelve.

The barium meal was essentially negative except for the enlargement of the liver and spleen, and some slight iliac delay. Liver function test: Hemoclastic, 13,800, 13,800, 16,200, 17,700. Biliary drainage showed the ordinary light amber color in the A and C specimens, while the B bile was a darker amber color. The gross examination showed the bile to be almost crystal clear. Microscopic examination revealed no evidence of pathology. Ferments apparently normal. Staphylococcus was removed from the A and C bile, while the B bile was sterile. This examination was essentially negative.

The patient was treated symptomatically, with tonic baths, general blood building diet, hot and cold applications over the liver, light massage, sun baths and various drugs to combat some slight diarrhea which was present at first. His weight remained

stationary throughout the treatment; he ran a slight temperature of 99° to 101° almost every day, for which no cause could be found beyond the cirrhosis. The hemoglobin improved slightly; the jaundice became less conspicuous, probably because of the brown pigmentation of the skin resulting from sun baths, as the conjunctival icterus remained unchanged. In our opinion the patient improved slightly during treatment.

The original hypertrophic biliary cirrhosis was first described, not by Hanot as many believe, but by Requin in 1846, to whom Hanot himself gives the credit of being the first to draw attention to this peculiar form of cirrhosis. Previous to that time knowledge of cirrhosis had been contributed by Laennec who stated, "A liver which contains cirrhosis loses of its volume instead of increasing in the same proportion." Hypertrophy with cirrhosis was admitted by a few who stated that it was strictly confined to the early stages of common or Laennec's cirrhosis. Todd, of England, in 1857, stated that it was a separate and distinct malady having nothing to do with cirrhosis. Requin, however, published his case describing a liver of 3,900 grams with marked evidence of cirrhosis both macroscopically and microscopically. Gubler in 1853 reported several such cases, and shortly after Lacoze, Genouville, Charcot, Luys, and others, contributed to the literature on the subject. Before that time the condition had been somewhat obscure and was looked upon as a special malady of the liver having nothing to do with cirrhosis. The first detailed description which included a number of cases with necropsy reports was given by Hanot in 1871, in which thesis he draws attention to the clinical difference between the alcoholic cirrhosis (synonyms, periportal cirrhosis, multilobular cirrhosis, Laennec's cirrhosis, gin drinker's liver) and the hypertrophic or unilobular variety. Since that time this rather uncommon condition has been associated with his name.

The etiology of this condition is still somewhat obscure. The finer biliary radicles seem to be the most affected, and on this account some have thought it to be an ascending affection from the duodenum, but the absence of any especial change in the pancreas seems to be against this theory, unless of course the infecting bacteria encounter less resistance in the bile than in the strong digestive juices of the pancreas. It is possible the infection is blood borne but the fact that the portal areas apparently escape would not lead us to believe this the case. We are still in the position of Hanot when he wrote:

"Quant à l'origine même de la maladie tout ou presque tout est hypothèse pour l'instant. S'agit-il d'une infection d'origine intestinale ou d'origine biliare? Peut être est-cedans cette voie encore inexplorée qu'il faut chercher la solution du problem."

The condition is most common in young adult males under thirty-five years. Cases have been reported in infants but these are rare. Heredity is probably not a factor. Alcohol, which plays such an important role in the etiology of the periportal variety is not a factor in this condition. Laennec's cirrhosis occurs in middle life or later, while Hanot's cirrhosis occurs in youth and middle age. Hanot's cirrhosis is characterized by enlargement of the liver and spleen, jaundice and irregular fever, which symptoms may persist for years. The stools are usually colored. The urine is usually dark from bile pigments.

Symptoms of the condition come on gradually, ushered in usually by some mild gastrointestinal disturbance followed by a slight painless jaundice, which gradually increases in intensity. There is usually an irregular fever from 99° to 101°. A moderate loss of weight sometimes follows but the patient may preserve his nutrition to the last. The itching from the jaundice is often intense and presents an aspect which is difficult to combat. Diarrhea alternating with constipation is frequently seen.

A diagnosis of Hanot's cirrhosis should only be arrived at after a careful consideration of other possibilities. This is quite obvious as many conditions resembling Hanot's cirrhosis are curable, while Hanot's cirrhosis invariably ends fatally. This calls for extensive investigation both clinically and employing laboratory methods. Patients must be observed over a considerable period of time, preferably in an institution. The other conditions which must be thought of are:

LAENNEC'S CIRRHOSIS

The term atrophic, when applied to this condition, is a misnomer, as frequently the liver is several times normal size. Cases have been reported where this organ weighs 6,000 grams. The condition usually occurs in males in middle life or later. There is usually a history of alcoholism, although this factor is not absolutely essential, because it is generally conceded that something else besides alcohol damages the liver. This unknown factor is probably an infection. In most cases of periportal cirrhosis the liver is not enlarged. The spleen may be slightly enlarged; generally it is of normal size. Typical late cases show evidence of ascites. Some cases of Laennec's cirrhosis have a slight icteric tint, but rarely reach the deep jaundice of Hanot's cirrhosis. Chronic tubular nephritis may go on slowly to form a picture of chronic interstitial nephritis, so also a liver fibrosis which is primarily interlobular may extend until it becomes intralobular and affect the bile ducts, ultimately producing jaundice. Unless there are complicating conditions such as tuberculosis, which is frequent, no rise of temperature is found.

SYPHILIS

The introduction of the Wassermann reaction and its general employment in obscure cases has revealed that syphilis may cause some confusion if a diagnosis is attempted by clinical means alone. Hanot cites the case of a woman with enlarged liver and spleen, slight, irregular fever, with jaundice, where the diagnosis was Hanot's cirrhosis, but the case, coming to autopsy, showed unmistakable evidence of syphilis.

COMMON DUCT OBSTRUCTION WITH STONE

The difficulty should not be great here. A history of rather sudden onset with pain is suggestive. The jaundice seldom persists for any length of time without biliary colic. There may be some infection or cholangitis, causing a rise of temperature and even some slight enlargement of the spleen, but this latter organ seldom obtains the size one sees in Hanot's cirrhosis. Also x ray of the gastrointestinal tract will show a stone in forty per cent. of cases.

Common duct obstruction from pancreatic neoplasm may cause confusion. It is to be remembered that ten to twenty-five per cent. of these cases show no jaundice when they come to autopsy. These, of course, will not be confused with Hanot's cirrhosis as the jaundice in this condition is striking. The temperature is generally normal or subnormal, unless complications are present. The wasting is rapid and the jaundice increases with greater rapidity. Glycosuria may be present. Fatty stools are common owing to obstruction of the ducts. The presence of an enlarged gallbladder is evidence in favor of this condition.

CATARRHAL JAUNDICE

The history is helpful in cases of catarrhal jaundice, including those of poisons such as salvarsan, benzol, and similar drugs. In the latter conditions there is usually atrophy of the liver instead of hypertrophy. There is no enlargement of the spleen. The jaundice of this type will subside in a few weeks.

MALARIA

This condition is quite uncommon in temperate zones, especially that variety where the symptoms are marked and jaundice and hypertrophy of the liver and spleen are present. Occasionally one sees malaria with digestive disturbances, loss of weight and strength, yellow color of the skin in the late stages, hypertrophy of liver and spleen, diarrhea and albuminuria. A careful search for parasites in the blood will give important information. Some maintain that these parasites are liable to be found in the peripheral blood stream following perspiration from a sweat bath. The temperature chart may show a quartan or tertian type of the disease. The presence of chills is not usual with Hanot's cirrhosis. Finally in doubtful cases no harm can result from a therapeutic test of quinine.

BANTI'S DISEASE

There is a strong tendency to diagnose cases of anemia associated with splenomegaly as Banti's disease, without a thorough searching investigation. The early stages of this condition should present no confusion with Hanot's cirrhosis. This is fortunate, as splenectomy will cure the whole malady in early cases, providing it does not kill the patient through uncontrollable hemorrhage at the operation. In later stages of Banti's disease, jaundice with cirrhosis of the liver may be present. Usually the history of repeated hematemesis is significant. Ascites is the rule in late Banti's disease.

CARCINOMA OF LIVER AND BILE DUCTS OR GALLBLADDER

These are probably more liable to be confused with cancer of the pancreas. Carcinoma of the liver, either primary or secondary, may occur after forty years, but secondary cancer of the liver with primary cancer in the colon may occur in early youth. Zuppinger has reported a case in a girl two years of age, and another in a boy of thirteen years (Ruczyuski). Jaundice is frequently present both from pressure on the hepatic ducts from extension within the liver and also from enlarged lymph glands at the portal fissure. Fever is not uncommon. The liver may or may not be painless; ascites is the general rule. The x ray may reveal primary cancer in the gastrointestinal tract. A primary cancer in the liver is rather uncommon. The spleen is not generally enlarged unless, of course, it contains extension of the neoplasm. The liver in this condition is quite nodular, while in Hanot's cirrhosis it is only slightly irregular or even quite smooth.

FAMILIAL HEMOLYTIC JAUNDICE

This condition is either congenital or occurs in early childhood. It is characterized by an enlarged spleen, a history of jaundice in the parent, and increased fragility of the red blood cells in hypotonic salt solution. These cases are acholuric; there is no itching with the icterus; in fact, as Moynihan has pointed out, these patients are more jaundiced than ill. The enlargement of the liver is not so marked. It should be remembered that gallstones occur in some sixty per cent. of cases.

In connection with the differential diagnosis of jaundice with enlarged liver and spleen, mention should be made of the newer liver function tests including the tests for hemolytic or obstructive jaundice introduced by van den Bergh of Utrecht. I have not had enough experience with these to warrant an opinion. No doubt they will prove useful in their place. In a multifunctioning organ such as the liver, it should, of course, be kept in mind that these tests will show one single function only; whereas the liver may be deficient along one line, it may be highly efficient in others.

Normally, the liver averages some 1,600 grams in weight. In Hanot's cirrhosis the liver is definitely enlarged to 2,500 or 3,800 grams. The surface is finely granular and of a greenish tint. On section, it is firm and the cirrhotic lobules present the appearance of granite. Microscopically there is a delicate fibrosis of the individual lobules. The individual lobules show fine fibrosis while delicate strands of connective tissue isolate small groups of liver cells. The portal system appears to be free. Hanot's original cases were mostly those seen in an early stage in patients who had died from an intercurrent disease. This microscopical picture is contrasted in Laennec's cirrhosis by the proliferation of connective tissue enclosing several lobules (multilobular cirrhosis). In advanced cases the connective tissue is occasionally seen to infiltrate the liver cords, but this latter intralobular invasion is rare, while in Hanot's cirrhosis it is typical. The spleen, the normal weight of which ranges around 200 grams, in Hanot's cirrhosis will be found enlarged from 500 to 1,200 grams; indeed some spleens are even larger than the liver. Microscopically it is characterized by endothelial proliferation. The alimentary tract is clear.

TREATMENT OF HANOT'S CIRRHOSIS

There is no specific treatment. If, after biliary drainage, organisms can be cultured from the common duct or C bile, vaccines can be tried, but it would seem that enough antigen is already present to furnish stimulation for antibody production. Modified rest is indicated depending on the patient's physical condition. In our case the patient was kept in the open air gymnasium with the whole of the body exposed to the sun for several hours each day. This seemed to increase his strength to a certain degree. The diet should be watched carefully as these patients have an irritable gastrointestinal tract which is characterized at times by alternate constipation and diarrhea. We were unable to notice any appreciable

change in his condition which we could attribute to biliary drainages, a number of which were tried. Improvement as the result of this therapy could scarcely be expected as the fibrosis and scarring had probably already progressed to an irreparable degree.

The jaundice is a stubborn and irritating condition seemingly more noticeable when the patient becomes warm and perspires. Sponging with two per cent. phenol solution is helpful, or a dusting powder of equal parts of sodium salicylate and starch can be tried. Calcium chloride intravenously in doses of five c. c. of a ten per cent. solution, often so advantageous in the itching of many jaundiced conditions, we found quite ineffectual.

PROGNOSIS

The prognosis for cure is bad. These patients live in a fair degree of health from fifteen months to nine years. The end usually comes accompanied by increasing cachexia, deepening jaundice, stupor, convulsions and more rarely hemorrhages.

CONCLUSIONS

1. A case presenting the clinical symptoms of Hanot's cirrhosis is reported.

2. It is of decided importance to investigate thoroughly cases of splenomegaly with jaundice and enlargement of the liver, as cases of this type are at times confusing.

3. An early diagnosis in cases of this type is highly essential and a diagnosis of Hanot's cirrhosis should be considered only after thorough investigation.

4. As these patients live for some time, it is necessary that they be made as comfortable as possible.

Control of Morbidity and Mortality of Diphtheria

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Control of morbidity as well as of mortality for diphtheria, unequalled in typhoid fever, is possible for two reasons. First, nasal carriers of diphtheria are pathologically evident to the eye and confirmed by bacteriological examination; secondly, frequency of the common respiratory diseases, measles in the main, is causative of nasal diphtheria carriers.

In a recent article in this journal (1) biological evidence was given as to the production of virulence in the diphtheria carrier. At the 1924 annual meeting of the American Public Health Association I presented statistical evidence showing that the variations of rates for morbidity and mortality during a period of fourteen years in New Haven confirmed the field evidence of the two main factors causative of these variations, one factor, the nasal carrier, and the second factor that of other respiratory disease frequency, measles in the main (2).

Yet more recent statistics are now available to demonstrate more clearly actual control of morbidity and mortality of diphtheria. Properly to apply and appreciate the statistics, a review of conditions may be given. During and following a measles epidemic in 1914, in New Haven, the apparent interrelation between nasal diphtheria carriers, measles and the ensuing increase in cases of diphtheria was first observed. Having but one assistant, an inspector, search for, and isolation of nasal carriers was at the time possible in but one district. Beginning in the district where measles first started, an appreciable diminution of both cases and deaths in diphtheria for the following year occurred to the exclusion of all other city districts where increases followed. Following an epidemic of measles in 1917, based on the results of 1915, two nurses were employed for two months. In that time they made a nasal inspection of approximately the entire school population, a total of 35,000. Definite reductions in every district of the city in morbidity and mortality for 1918 for diphtheria could be shown. With a change in administration for the next three years, these procedures were held in abeyance.

Epidemic measles in 1920 was followed by an increase in morbidity and mortality for diphtheria for every city district. Again taking up the work at the close of 1921, the personnel of the bureau now comprised two nurses in addition to the inspector. Epidemic measles in 1922 again furnished the opportunity, together with the fact that one city district had been taken over in mid 1920 for a three year demonstration health centre. Under a separate medical direction, our procedures were not in force in that mentioned district. In mid 1923 this district health centre was closed and the district again merged with the city department. With an additional nurse an opportunity offered of systematically combing this district for nasal carriers. An expected probable measles epidemic for the year 1924 showed only as a high frequency practically limited to this district and appearing late in the spring. As a result of the combination, over half of the year's diphtheria carriers for the total city were found in this district, the majority of the carriers being found during and after the measles frequence among those affected, or their contracts.

TABLE I.

MORBIDITY AND MORTALITY RATES FOR DIPHTHERIA FOR DISTRICT A, DISTRICT HEALTH CENTRE AND CITY EXCLUSIVE OF HEALTH CENTER.

	1922	1923	1924
District A			
Morbidity rate	183	60	42
Mortality rate	12.5	2.5	0
District health centre			
Morbidity rate	125	100	60
Mortality rate	11	14	3.2
City, exclusive health centre			
Morbidity rate	100	55	35
Mortality rate	4.9	2.8	1.4

Our premises are, then, that diphtheria morbidity increases during and following epidemic measles, and that diphtheria mortality increases during the

last half of the year where measles is epidemic during the first half, and extends into the first half of the following year. Accepting the fact we have previously shown, that a city district, later called district A, had yearly been comparable with the health center district by reason of higher case and death rates from diphtheria, with a half greater population and more cosmopolitan in composition. Table I bears out our premises.

The accompanying chart shows the morbidity and mortality rates for the four cities of the state with populations in excess of 100,000 and for our neighboring cosmopolitan city. The rates for the first nine years are taken from the annual reports of the United States Public Health Service, mortality rates for New York city excepted. In the latter instance figures from the United States Census Bureau Report 1910-1920 are used in that the rates show wider variations. The figures for the Census Bureau are inclusive of nonresidents, a fact of excess rates for Hartford and New Haven, but of no moment for New York city.

It will be seen that the curves for both morbidity and mortality for New Haven are in accord with the rather uniform, wide variations of the other four cities of the state during the years 1919-1921 and to a slight extent for 1917-1918. Alone of any one of the sets of curves, that for New Haven departs from all others for the year 1922, an epidemic measles year is the first instance of a lowered morbidity rate and for 1922 and 1923 for lowered mortality rates. Yet even in this city the general rule did hold good for increased mortality rate, 1923 for one district only, the health centre as shown in Table I. No less important may be the upward trend for New York city, in 1924. In 1923 two of the five boroughs showed new low levels, Manhattan with one of 8 and the Bronx with one of 4.3. For 1924 following epidemic measles morbidity and mortality from diphtheria were increased for the various boroughs, the widest variation being the Bronx with a half greater morbidity, 133, and a mortality rate of 10.8.

One may readily understand why increased morbidity and mortality for diphtheria may follow epidemic measles when dependent on the tide of nasal diphtheria carriers produced. Why, as is very generally found, the increased mortality should extend into the following year, is one of the important phenomena connected with diphtheria. Constituting as it does an increased case mortality rate, investigations are concerned with the possibility of severer types of disease, of an excess of unreported cases or with the lateness, insufficiency or impotency of the antitoxin. Our experiences of 1916-1917 were that "visibly sore noses" were frequently a pure culture of streptococci, that immediate contacts of such nasal carriers were clinical cases of diphtheria although bacteriologically streptococcal, and that one of the periods of their frequency was during measles epidemics. With the cessation of the measles frequence, there followed streptococcal sore throats, both primary and complicating true cases of diphtheria. It was not an unusual occurrence to have one convalescent from true diphtheria die from a complicating streptococcus. With susceptible material on the wane, the streptococcal infections came to the fore, and with more age groups susceptible than with diphtheria, the increased mortality rates included deaths from diphtheria, where bacteriologically and epidemiologically numerous immediately preceding contact illness of families and neighborhoods bespoke the unproved case as not a true case of diphtheria. Our experience was that clinical laryngeal diphtheria

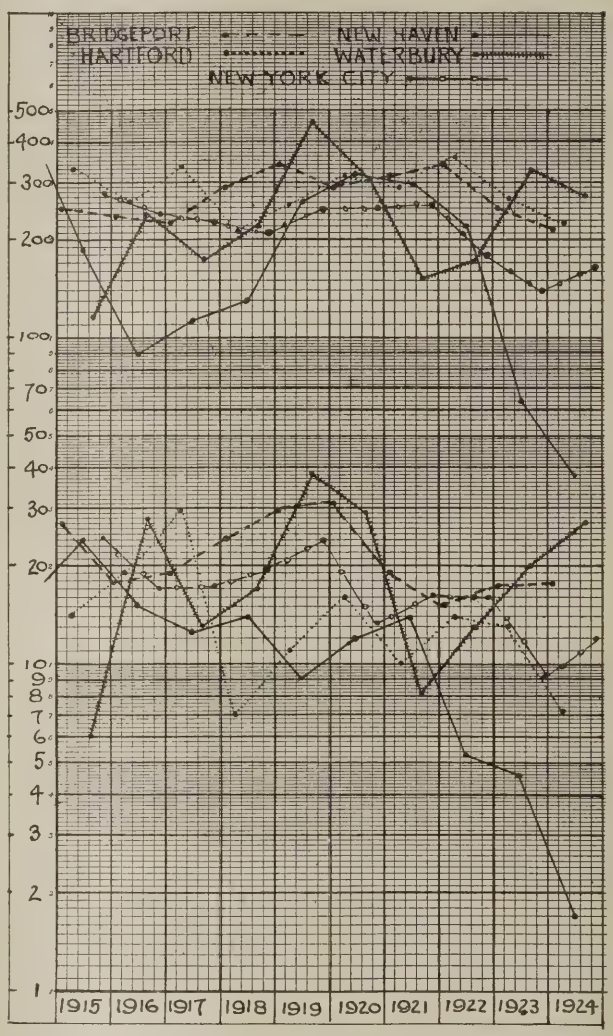

Chart showing morbidity (upper) and mortality (lower) rates of diphtheria in 100,000 of population, in Bridgeport, New Haven, Hartford, and Waterbury, Conn., and New York City.

of early childhood during the early year following epidemic measles of the previous year was of the first order in this ensuing increased diphtheria mortality. To have as was recently the experience of more than one city, an unusual epidemic of diphtheria with unusually high mortality where it was the experience that deaths occurred irrespective of early and sufficiency of antitoxin, sidetracked the issue when the only explanation was that the experience bore some relation to the influenza epidemic preceding.

With our previous experience of former years we have during and following the measles epidemic of 1922, isolated and held for cure every "visibly sore nose." With equal assurance we pass by the ordinary common head cold. Ten years ago an afternoon's drive through streets where children congregated never failed to net a number of nasal carriers. At the present time five individuals as

keenly search, but with infrequent findings. The value of frequencies of respiratory disturbances may be shown in the following instances. The first three months of 1923 were characterized by an unsual amount of school absenteeism for minor illnesses. Out of the several thousand of children out of school for more than three days who passed before me in the office for a school permit, I found by nasal inspection fifty diphtheria carriers. For the similar period, 1924, unmarked by notable respiratory disturbances, I found but one nasal carrier, while for the same period for 1925, a period as notable for school absenteeism as in 1923, I have found but a single nasal carrier.

CONCLUSION

There are definite opportunities of controlling hitherto uncontrolled morbidity for diphtheria as well as controlling excesses of mortality. Measures to be effective must have consideration for other intercurrent respiratory diseases which not only complicate but stimulate the disease diphtheria. The main factor in the spread of diphtheria is the nasal carrier of diphtheria. Excesses of morbidity are a measure of the tides of nasal carriers produced by intercurrent respiratory diseases, measles in the main. Excesses of mortality have a further factor. Nasal carriers of other infections simulating as well as complicating diphtheria must also be controlled. Effective administrative measures are no less responsible health department procedures, as was formerly theorized; they are merely a rearrangement of eyes and nose and substituting the common diseases of man for the older concept of environment.

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Pituitary Type of Headache

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About the year 1913 I had occasion to analyze a number of cases of severe headache associated with menstrual irregularities, and came to the conclusion that the suggestion which I was then studying—the suggestion of Professor Paul Dalché of Paris that the thyroid aspect of menstrual irregularities was extremely important and that ovarian therapy really should be broadened by the addition of a suitable amount of thyroid—could be made still more effective by considering the possible pituitary aspects of this evidently pluriglandular disorder.

It is clear that the pituitary gland, almost equally with the thyroid, is definitely concerned in the initiation as well as the maintenance of the function of the sex glands and perhaps, more particularly, of the female sex glands.

In considering several of my own cases as well as a number in the hands of various colleagues, it was evident that the pressure type of headache, not unusual in cases of more or less serious menstrual irregularity, might be considered to have a fundamental pituitary origin. In view of this and because there was other evidence of a pituitary defect in certain of these cases, pituitary substance was added to the treatment, thus replacing ovarian therapy first with ovary plus thyroid, and later with ovary plus thyroid plus pituitary. The remarkable broadening of this particular form of organotherapy by the addition of a small dose of total pituitary substance was most noteworthy in this special type of cases, that is, those in whom the menstrual irregularity was accompanied by a serious headache.

While it is difficult to study a condition of this kind from the point of view of accurate laboratory physiology and comparatively easy to study it from the more empirical and less appreciated clinical method, we had to presume that the added demands upon the pituitary during the period of ovarian difficulty, caused an increased blood supply to this gland and consequent temporary hypertrophy, for hyperemia is consonant with hypertrophy, especially when the organ happens to be enclosed in a closely fitted sella turcica.

It was clinical results which so often followed this form of pituitary therapy, and particularly the results in the cases that had only been modified partially by ovarian therapy or ovarian thyroid therapy alone, that caused the conclusion that there was indeed a definite functional pituitary type of headache.

Later on, we obtained more information on the subject and our appreciation of the method was made clear by papers on the subject by several writers.

Quite recently a Chicago internist, Joseph L. Miller (1), prepared a paper on pituitary therapy as a part of a series of articles on glandular therapy, published toward the close of 1924. In the course of this article, Dr. Miller indicated that he was not well posted on the clinical use of pituitary substance in cases of this kind, and had not read the literature very thoroughly, since he made this statement: "There has developed recently considerable literature on the value of pituitary substance by mouth in the treatment of pituitary headache. A review of the literature fails to reveal a headache that justifies this name, except in cases in which a tumor is present."

This clearly indicates that Miller does not believe in pituitary headache except when obviously due to a pituitary tumor. Such a mistake should not be permitted to go unchallenged, and, therefore, I submit herewith a number of excerpts and supplement them with some clinical experience which I do not believe can be gainsaid.

The two most important papers in the American

medical literature are those by Pardee of the Neurological Institute of New York and Engelbach and Tierney of St. Louis. The former writer (2) makes the following statement: "A disproportion between the pituitary body and the sella produces pressure on the sensory nerves to the dura; and by its encroachment on the cavernous sinuses it may cause interference with the cerebral circulation, the whole setting up the train of pituitary symptoms, including headache."

Pardee proceeds to give the clinical impression that such a headache produces. He says, "The headache is situated deep in the forehead behind the eyes. Deep pressure on the temples may elicit some tenderness. This headache is very persistent, usually lasting from half an hour to forty-eight hours, and it may be continuous, frequently coming on in the female at the time of the menses."

Further on, in the same paper, Pardee makes a statement which is quite different from that made by Miller; he says, "The administration of whole pituitary is specific . . . . . continuous medication with pituitary will result within a few days in a decrease in the intensity of the headaches; there will be a longer period between their return," etc.

Another writer, J. Allison Hodges (3), of Richmond, Va., seems to be more in agreement with Miller when he says: "Pituitary headaches are not the result of functional disturbances, but are due to anatomical abnormalities, which, in part, interfere with the proper functioning of the pituitary gland, this type of headache being due to an altered secretion of the pituitary which causes swelling and consequent permanent enlargement of the gland." Hodges proceeds to speculate as to whether this enlargement is caused by some compensatory demands upon the gland, and then remarks, "The fact remains that the pituitary gland in many cases does enlarge, and because of its anatomical position and consequent constriction in a bony enclosure . . . . . is not allowed to expand; consequently there must arise pressure symptoms and resultant localized pain." Still further along in the same article is this statement: "Pituitary headaches in properly selected patients are uniformly responsive to glandular therapy in proper doses."

I cannot quite agree with Hodges that these headaches are due to definite anatomical abnormality. While it is perfectly true that hyperemia brings about an anatomical change in an organ, this is not comparable to an abnormality such as one expects in tumor. Its functional character in a great many of these cases permits its reduction and disappearance following proper treatment or the removal of the underlying cause, hence it does not seem fair to consider these headaches as due actually to an organic or anatomical change, at least, not a permanent one.

John A. Glassburg (4) of New York considers the pituitary headache in rhinological practice, and says, "I wish to emphasize the fact that there is a definite distinct type of headache which is met quite often in rhinological practice; that this headache is due to a disturbance of the secretion of the pituitary gland; that it may exist concurrently with nasal pathology; that it is wholly independent of this pathology; that it is not relieved by nasal operations, but responds to specific endocrine medication and, finally, that in order to diagnose this type of headache yet render proper treatment . . . . it is absolutely necessary to obtain a complete anamnesis, do a thorough physical examination and employ the laboratory aids requisite."

John T. Halsey (5), of New Orleans, refers to pituitary headache in the following terms: "The frequency with which recurring headache of a peculiar type (bitemporal, very intense, described by the sufferer as boring) was present in patients presenting other conditions suggestive of pituitary disturbance, led Pardee to administer pituitary substance to a series of seven such cases. The results obtained were most gratifying; and in all the cases making up this series, there was marked amelioration or cure of the headache . . . . Glassburg reports that the daily administration of pituitary extract cured several severe headaches of over two years' duration. Dalché reports relief of a headache from the administration of 0.1 gram of dried extract of the whole gland, two to four times daily in a case in which an endocrine upset had induced congestion of the pituitary. Timme and many others have noticed that in many cases of dyspituitarism, relief of headache followed pituitary medication."

I now quote from an important article by Walter Timme (6), in which his opinion of the importance of pituitary headache is quite clear. Referring to a certain feature of a type of cases which he classed as suffering from "a new pluriglandular compensatory syndrome," Timme proceeds: "In our judgment, it is the pituitary gland which is here the critical factor. As we have seen, it is invariably enclosed in a small sella turcica, and possibly even hemmed in by the clinoids . . . . If the pituitary possibly could become hyperplastic and hyperactive . . . . compensation might be accomplished. Such tendency to hyperplasia in a small cavity would, of necessity through pressure, produce headache—an invariable symptom in the third stage of these compensated cases." Timme then proceeds to discuss the other incidental features accompanying enlarged pituitary gland which became manifest in several of the cases under his care, and further on remarks: "Curiously enough, in all our cases, the feeding of the pituitary gland in fairly large quantity disposed of many, and at times, of all of these symptoms." This statement indicates to me that at least a proportion of the dyspituitarism mentioned by this writer, was of a functional character, for it is very well known that the pituitary headache resulting from pituitary tumor is not by any means spectacularly modified for the better by pituitary therapy, or for that matter by any other form of internal therapy.

Perhaps the most masterly article on the whole subject is that by Engelbach and Tierney (7), of St. Louis. A complete consideration of every feature of this disturbance is given and illustrated by a number of clinical experiences. It is evident that they consider the pituitary gland as the victim of circumstances which cause its undue enlargement, and that the pain comes about in the manner already outlined in quotations from other writers.

In that portion of this article referring to treatment (see page 493), it is interesting to note the

effect of treatment on some of their cases. One of these, a physician, aged thirty-one, was given simple thyroid therapy for the first three months of her treatment. This had a beneficial influence upon one feature of her difficulty—she lost nearly twenty pounds in weight. Her headaches occurred less frequently and were not so extremely painful. The dysmenorrhea was not affected. Evidently she developed some symptoms of thyroidism, due to the medication, in consequence of which the treatment was interrupted for several days. Later on, corpus luteum was added to the thyroid treatment for two months, and there was no further improvement in the condition. Then anterior lobe pituitary was added to the thyroid and corpus luteum, and was given by mouth and hypodermically. Soon after this combined treatment was given, the patient began to note marked changes towards improvement. After a month's treatment of this kind: "The patient had the first painless period in her menstrual life. The headaches, nausea, vomiting, nervous disturbances, mental confusion and irritability have disappeared entirely." This pluriglandular treatment was continued for some time further, "with remarkable freedom from symptoms and signs present previous to its administration."

This, to my mind, not merely emphasizes the importance of oral pituitary therapy in pituitary irregularities and especially what is believed to be pituitary headache, but it shows in a most conclusive fashion the value of pluriglandular therapy. Here is a patient—a physician herself—who takes thyroid therapy for months with certain indubitable benefit. Ovarian therapy is added with little or no benefit, but as soon as the combination of the thyroid, ovary and pituitary is given, to repeat the authors' own words "after a month's treatment of this kind, the patient had the first painless period in her menstrual life. The headaches, nausea, vomiting, etc. . . . . had disappeared entirely"—a very decided indication that pluriglandular therapy has some advantages over single gland therapy.

This reminds me of a point let slip by Harvey Cushing (8) in one of his papers on endocrinology which were quite numerous some years ago. In a footnote on page 1724 Cushing, referring to his series of 255 cases of pituitary disease, admits "A great number of these patients have been induced subsequently to follow out prolonged courses of glandular treatment. I cannot say that I have ever seen any definitely beneficial results of so doing except when there has been some concomitant thyroid want indicating the coincidental use of thyroid extract." This, of course, is the basis of all my notions on pluriglandular therapy and is, I believe, fundamental. I should like to ask these respected endocrinologists why they did not start with pluriglandular therapy and save the patients all the pain, expense and discomforts of treatment during the several months during which the single gland extracts were given experimentally?

To return to the importance and reality of pituitary headaches. I think that Dr. Joseph L. Miller's statement must be retracted. Undoubtedly, a number of important writers have contributed their impressions to a literature which will be found in any medical library and indicate that they believe that there is a functional pituitary headache, that this particular headache is due to a temporary enlargement of the pituitary gland and that consequently there is pressure upon the nerves to the dura; and, best of all, that this particular kind of headache very commonly is responsive to organotherapy.

If we believe with Dr. Miller that the only kind of pituitary headache is the one which is due to the pressure of a pituitary tumor, we are going to deny to a very large class of patients—pituitary headache, especially is quite a common symptom in women with menstrual irregularities—the benefit of a method of treatment which is nothing short of specific. In fact, one of the writers (Pardee) just quoted uses this particular term "specific."

After all, my own confidence in this advanced method of treating this condition has come about as the result of my own experience. I have treated at least one hundred cases of pituitary headache in women accompanied by ovarian irregularity. In practically every instance I gave a combination of thyroid, pituitary and ovary. Not in every instance, but in a large percentage of these cases, the headache was cured entirely, many having previously received sedative treatment and headache tablets, and some of them even morphine. I shall never forget the most spectacular of all of these cures: A woman in the late thirties had had headaches for ten years —not a series of headaches, or a tendency to headache, but a headache which lasted, without intermission, for ten years of her life! During that time she had had all sorts of treatment as well as a nasal operation and, I think, some pelvic surgery. The headache was never entirely stopped. During the period of influence of sedatives like morphine, her headache would be dulled and perhaps lost temporarily, but she had a headache none the less, she merely could not feel it for the moment. This patient was cured in three months following this pluriglandular treatment just outlined, and the attitude of this woman following so simple a treatment over so comparatively short a time was such as to make me forever remember the reality of the condition as well as the valuable influence of this treatment.

Unfortunately, it is not possible to treat pituitary headache with success in every case, for it is sometimes difficult to modify the fundamental underlying causative factors, but in fully fifty per cent. of these cases the results are not merely good, but often spectacular, and one has only to meet a few of these women to be assured of the fundamental correctness of the pathologic deduction and the years of clinical work that has been built thereon.

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The Mastoid Operation

A Discussion of the Results in One Hundred Cases

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In studying the results of any particular procedure there are certain distinct and definite requisites necessary if they are to be relied upon and one is to accept the presented data as authentic. First, the number of cases studied must be sufficiently large so that the conclusions drawn will be based upon as wide and varied an experience as is possible. Second, the procedure employed must be similar in all cases, or at least the fundamental and basic principles underlying the operation must be identical. Third, the after-treatment which is of the utmost importance and leads up to the final result desired should be of the same kind and carried out as much as possible under similar conditions. Fourth, the results of the operation should be governed by determining at the time of discharge, the following: condition of the posterior wound, condition of the middle ear, in regard to whether it is dry or moist, the presence or absence of perforations in the drum membrane, and lastly, the state of hearing.

One hundred cases are a sufficiently large number from which to draw some valuable conclusions. The cases were taken as they occurred without any attempt to select them. Of the series we are reporting eighty-one were seen in private practice, and the remaining nineteen were clinical cases. Seventeen of the one hundred were in adults and the remaining eighty-three occurred in children (the patients under seventeen years of age being included in the latter class).

It is not our intention in this paper to discuss the etiology or pathology of acute mastoiditis, but we wish to express our opinion concerning certain observations we have made in the past few years that have special bearing upon the course of the disease. Whether in a given patient with acute suppurative otitis media, a mastoiditis will develop depends not so much upon the physician nor upon the treatment, but upon the anatomical conformation of that particular patient's attic, antrum and mastoid process, and upon the type and virulence of the infecting microorganisms. It is purely and simply a question of drainage facilities that determine the outcome of any given case. It is a known clinical fact that ears will rupture spontaneously and go on to complete recovery. On the other hand cases will run a similar course, the ears opening of their own accord and finally terminate with an operative mastoid. Then again patients will come to us with well established acute otitides—red angry bulging drums, we incise, obtain pus, and prescribe the usual irrigations. The discharge continues for from one to three weeks and gradually subsides with complete recovery. On the other hand we get an early case of forty-eight to seventy-two hours' duration; there is distinct bulging; the child has severe pain and rise of temperature; we incise, obtain pus, prescribe the same irrigation and the child goes on to the development of a mastoid abscess. In these children who eventually come to the operating table their acute otitis begins with a simultaneous involvement of the mastoid cells. By this we do not mean the mild involvement that we see in many cases the first few days of the acute otitis. With an inflammation of the middle ear the contiguous mucous membrane of the mastoid cells is also sympathetically inflamed, but with the establishment of drainage this gradually subsides. Tenderness over the mastoid process, particularly in the region of the antrum, and even spontaneous pain occurring the first few days of the middle ear suppuration are of little importance. It is only when these symptoms referable to the mastoid persist, especially after the drum has been incised and drainage well established, that they begin to assume some importance.

It is therefore our opinion that all cases of mastoiditis which are associated with suppurations of the middle ear are not complications of the latter condition, but are concomitant inflammations that originate at the same time; in other words, mastoiditis should not be reckoned as a middle ear complication. A mastoiditis is a mastoiditis from the moment the otitis begins, and cannot be prevented. For this reason in cases that often receive the utmost care and attention, where early and adequate incision is made, where proper cleansing of the secretions is strictly adhered to, and where the child is given all possible general support, the patient is obliged to submit to operation despite all these measures.

It is not our desire to disparage early incision of the drum membrane where indications are present, nor to urge against any of the well founded and logical measures constituted in the aftertreatment of such cases. We must use every possible effort to aid the patient in overcoming the infection, for as in all other acute inflammations, with the establishment of proper drainage facilities—and this can only be hoped for in cases where the anatomical conformation of that particular patient's attic and antrum will permit of such drainage—the condition can subside and the patient go on to complete recovery.

In all our cases we have been rather conservative in advising operation upon the mastoid. The patients were carefully observed and every possible opportunity given them before we decided to interfere. In adults particularly we waited until we were pretty well assured that spontaneous recovery was improbable. Great stress was laid upon the late tenderness and pain in the mastoid, that is to say, patients who so complained during the third and fourth week of the disease, even with a fairly good looking middle ear, we urged operation and we can truthfully state that in every case falling into this category we found ample disease and necrosis in the mastoid. In summing up the indications for operation we took into consideration the following points.

TENDERNESS OVER THE MASTOID

This tenderness is elicited upon palpation over the mastoid process and is due to direct pressure against inflamed tissue. Of all signs and symptoms of mastoid disease this is the most constant and reliable one in determining operation. The acuteness of this tenderness varies in different individuals but as a rule its intensity is an indication as to the severity of the mastoid disease. Sensitive patients, however, are likely to complain more than others and this must be taken into consideration, especially in children. Of great importance is the tenderness that persists during the second and third week. As has been pointed out before, the early tenderness which occurs in many cases during the first few days usually disappears at the end of a week. It is the persistence of this tenderness that is of such great importance. The location of the tenderness varies. It may be over the region of the antrum, over the tip, over the posterior group of cells, or over the premastoid lamina. In most of our cases the region of the antrum seemed to be the point of election. However, tenderness need not be present and its absence does not preclude mastoid disease, for in cases with a very thick cortex or with a forward sinus with few or no cells between it and the cortex pain upon pressure may be absent.

SPONTANEOUS PAIN IN THE MASTOID

This is due to actual active inflammation of the bone and its mucoperiosteum and as in all bone diseases the pain reaches its acme of severity at night. It is not present in all cases. As a rule it is associated with tenderness, although the latter may not be accompanied by it. In children it manifests itself by restlessness and irritability during the day, and sleeplessness at night. The pain need not be localized over the mastoid itself but may be referred to any part of the head on the same side. It may be parietal, occipital, and even frontal. Characteristic are the lancinating, shooting pains across the head originating in the region of the mastoid and radiating up over the parietal or back to the occiput. The pains seem to be more severe in those cases in which there is disease of the dural or sinus plates.

THE CONDITION OF THE MIDDLE EAR AS GOVERNED BY THE APPEARANCE OF THE DRUM MEMBRANE

At the end of the second week there should be evidences of beginning resolution. A case in which the drum is boggy, edematous, and thickened is not doing well. The drum membrane appears to be prolapsed and from beneath the prolapse one notices the escape of pus. We are likely to believe that this bulge is the result of pus under pressure but repeated incision does not confirm this, for the drum bleeds profusely and our incision fails to yield pus. The presence of granulation tissue speaks against a speedy recovery. The location of the perforation is of great significance. We wish to emphasize that the condition of the middle ear as evidenced by the appearance of the membrane tympani is not always a criterion of what is going on in the mastoid process. It is true that our opinion in a suspicious mastoid receives confirmation when the otoscopic appearance of the middle ear is commensurately poor. Nevertheless there are cases in which we have good looking middle ears, even to the extent that resolution is well established and yet the mastoid involvement has progressed to a state where surgical intervention seems imperative. It is just such cases in which we find a narrow attic, that in the course of the disease the communication between the middle ear and the antrum becomes obliterated either through lodgement of a plug of pus, exudate, or newly formed granulations. The middle ear because of adequate drainage goes on to complete resolution, even with closure of the perforation in the drum membrane. The infectious process in the mastoid, however, continues and eventually calls for operation. Then there are those cases in which the causative microorganism is the insidious Streptococcus mucosus capsulatus, first described by Neumann and Ruttin, in which the middle ear may be practically normal, without perforation, discharge, or redness and with few or no mastoid manifestations. This organism has a faculty of avoiding the middle ear, lodging directly in the mastoid cells (1). The first symptom that directs our attention to the existing condition is the appearance of a postauricular swelling, a sign of already well advanced suppuration of the mastoid. We have seen two such cases in our series, one occurring in a member of our own family, in whom both mastoids followed this course just described, and in which the streptococcus was recovered in pure culture from the pus at operation. Rae believes that in all these cases there must be a middle ear stage occurring often several weeks before the onset of the mastoid symptoms. In one of our cases we obtained such a history—the child having complained of pain in one ear for a period of several days—three weeks before the appearance of the postauricular swelling. The pain disappeared and no aural discharge was noted at any period. At the time of operation the otoscopic picture was practically negative. Dixon (2) goes so far as to advise exploratory operations in all cases in which the streptococcus has been obtained from the discharge of the middle ear, if the discharge persists even in the absence of other symptoms of mastoiditis.

SAGGING OF CANAL WALL

Sagging of the posterior superior canal wall is an important finding. It is due to periostitis causing edema of the floor of the antrum and attic. Its presence coupled with other signs makes mastoid involvement very probable. Nevertheless in very young children its importance we feel has been overestimated. Cases with sagging can clear up and this is a positive clinical observation (3). In adults, however, it is of the utmost importance.

AMOUNT OF DISCHARGE

A discharge no matter how profuse in the early days of the disease can eventually cease with complete recovery. It is not so much the amount of discharge that flows out of the middle ear that concerns us, but whether or not it shows a tendency to diminish. A profuse discharge late in the disease points to the involvement of a larger surface than is contained in the middle ear cavity.

TEMPERATURE

Uncomplicated cases of mastoiditis have little or no rise in temperature. Its presence in adults often signifies some other complication. Having ruled out

all other possible general sources for its presence only then are we justified in attributing it to some otitic complication. In view of the fact that a simple acute suppurative otitis media in children will be accompanied by fever (4) and with mastoid involvement will protract a higher febrile reaction, it is a difficult matter to determine how much of the fever is due to the otitis, and how much of it is the result of the superimposed mastoid disease. Persistent high temperature which does not yield to the more conservative measures does call for interference. In general it may be said that the temperature alone should not be taken as an indication for operation for it is a poor index as to what is going on in the mastoid cells. In most of our cases there was little or no temperature. In some, with practically no fever, we found the mastoid extensively diseased.

X RAY

In young children röntgenological examination of the mastoid is of practically no value. In some adults, however, where we are undecided this will prove a valuable aid in the diagnosis. A good röntgenologist is of inestimable value to the otologist.

GENERAL CONDITION OF PATIENT

Where a patient is doing well generally we can take plenty of time to study our case before we come to a definite decision to interfere. However, an uncomplicated case of mastoiditis should not be very much affected systemically. These patients practically all suffer from anorexia, malaise, have a coated tongue and it is to be expected. Where there are evidences of greater systemic disturbances we are dealing with some complication.

DURATION OF DISEASE

It can readily be understood that the duration of the disease modifies greatly the value of those points enumerated above. The later in the disease these signs and symptoms appear, or rather the longer they persist, the greater their significance as evidence of mastoid disease. Few patients with the exception of those with subperiosteal involvement, were operated upon before the third week. In young children, when in doubt we advised waiting for a swelling. In several adults we advised operation the second week, but in these cases the patients presented classical pictures and we dared not procrastinate, for spontaneous recovery seemed improbable. It is a difficult matter to attempt to put a time limit and be guided simply by the number of days or weeks that the illness exists. Some advocate operation in all cases in which the discharge persists more than six weeks (5). We cannot share this opinion. With absence of other symptoms the discharge itself is not a sufficient indication for operation at this time. We have all encountered cases that discharged eight and ten weeks and conservatism has been rewarded with complete recovery.

SYMPTOMS OF A MORE SERIOUS COMPLICATION

As soon as a definite diagnosis is made the mastoid should be opened. Politzer (6), however, advocates waiting until the eighth day before interfering unless there are symptoms of meningeal irritation. Delay simply increases the possibility of such complications. Furthermore, it should be remembered that we cannot measure the extent and severity of destruction by outward manifestations. It is therefore the endeavor of the otologist to recognize these possible dangers and so avoid sequelæ that can justly be attributed to undue and unnecessary procrastination. Briefly, in a suspicious mastoid those manifestations that indicate possible extension of our inflammatory process in the mastoid to more important structures and call for immediate operation are: symptoms of meningeal irritation; persistent high fever, or a septic type of temperature, the source of which cannot be accounted for elsewhere; persistence of severe headache; recurrent chills and sweats; paralysis of the external rectus (Gradenego); paralysis of the facial nerve; signs and symptoms of vestibular irritation, such as vomiting and nausea and increasing evidences of a general infection or toxemia.

CASE HISTORIES

We wish to cite briefly several cases which will emphasize the importance of those indications we have outlined above.

The significance of remittent temperature will be appreciated from the following histories. In one case with a running ear two weeks, because of a temperature ranging between 99° and 105° F., we suspected a sinus thrombosis and upon operation found a thrombosis of the lateral sinus and mastoid emissary. In another instance a child eleven years old came to us in the fourth week of the disease, with a temperature that was fairly constant and not of a remittent nature, ranging between 102° and 105° F. He was pale and anemic, haggard looking, with an expression that was drawn and sickly—the patient apparently was suffering from severe septic process. This case was reported by us (7). At the primary mastoid operation we found a necrotic sinus filled with pus.

The significance of severe headache was demonstrated in a patient forty years of age, in the third week of the disease in whom we suspected a mastoid and advised operation. The patient refused and several days later he began to suffer from most excruciating headache. The pain on one occasion became so intense that he made an attempt to leap from his bedroom window. At operation this patient had an extensively diseased tegmen antri with a large epidural abscess.

A case reported by us (8) in a boy aged nine who sustained a fractured skull presented an acute mastoid ten days later. In this patient severe headache was a prominent symptom, not originating from the fracture, but from a large perisinus abscess. At operation we found the sinus plate necrotic, the sinus covered with granulations.

In one case there occurred a Gradenigo before operation. This patient was seen in conjunction with Dr. Friesner. During the fourth week of an otitis complicating scarlet fever a paralysis of the external rectus on the same side was noted. In addition there was slight mastoid tenderness, a poor otoscopic picture and the child complained of headache. At operation we found a mastoid containing diseased granulations, but no free pus. There was softening about the tegmen and the dura was exposed, but nothing abnormal noted.

(To be concluded)

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Dental Infections and Heart Irregularities*

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The clinical relation between tonsillar infection and heart disturbance was so generally recognized by earlier medical generations than ours that it is today a universal teaching that signs of heart involvement should be looked for during acute tonsillitis, rheumatic fever and chorea. Unfortunately, the clinical relation between alveolar abscess and heart abnormality is not so generally appreciated by the medical profession. Yet one infection is of as much importance as the other to the practising physician who is confronted with the necessity of investigating every circumstance that might be responsible for defective heart action among his patients.

DENTAL INFECTIONS MAY BE SYMPTOM FREE

There are several reasons that may be advanced to explain the failure of physicians generally to recognize the relation between dental defects and heart disturbances. To begin with, the idea is comparatively new. It was in 1910 that Sir William Hunter, at McGill University, first called the attention of physicians to the important subject of oral sepsis. Sir William's paper profoundly influenced dental thought and has been credited with being a prime factor in evolving the modern school of dentists who, by their progress in relieving the cause of some systemic diseases, have earned a right to a title more comprehensive than dental surgeons: they are in truth dental clinicians. Medical practitioners, during the same period of time, continued to follow their established custom of giving more attention to the treatment of acute conditions; and as periapical infections of the teeth are for the most part chronic in nature and usually symptom free, such infections frequently escape the notice of physicians today.

A third reason might be found in the skeptical attitude which medicine traditionally adopts towards any clinical premise that does not readily lend itself to being established by methods of scientific proof—although such a reticence towards admitting the possibilities of dental infection is scarcely consistent with the rush to embrace glandular therapy nor with the proposed wholesale dosing of the public at large with iodine.

There is, however, a logical sequence existing between cause and effect. Should an irregular heart become regular following the removal of peridental abscesses, one such single instance might be accounted a happy accident of chance. But when a similar sequence of events pertains repeatedly, and the previously harassed heart thereafter persists in acting normally, then clinical experience has grasped a truth with which scientific analysis would do well to catch up.

THE CAUSES OF HEART IRREGULARITIES

Among office patients, cases of irregular heart action can often be attributed to such causes as fatigue, anxiety, endocrine imbalance, gastrointestinal disturbances, faulty heart nutrition (as in blood impoverishment), to acute diseases, chronic systemic diseases, cardiosclerosis (as in persons of advancing years), to probable "fatty" heart (as in ponderous people who are confirmedly overweight), to infective tonsils and to the unguarded intake of drugs and other poisons. It is also true that irregular heart action in some patients can be attributed to absorption of toxins from peridental abscesses, as will be shown in the clinical experiences recited and illustrated in this article.

CIRCUMSTANCES OF STUDY

The four cases here presented have many features in common.

1. All of the irregular hearts became perfectly regular after the removal of peridental abscesses.

2. No other form of treatment whatever was employed in these patients: no drugs were given; the periods of physical rest were not even increased nor were customary activities curtailed.

3. Comprehensive physical examinations and routine clinical laboratory studies failed to reveal any abnormal conditions that might account for the irregular heart other than the coincident peridental abscesses.

4. The dentoradiograms in all cases were made by one röntgenologist; each x ray finding was confirmed by a clinical examination of each patient's mouth, conducted by a consulting dental clinician.

5. Heart irregularities will frequently disappear shortly after surgical procedures, for the reason that

*Cardiographic confirmation of probable cause and effect.

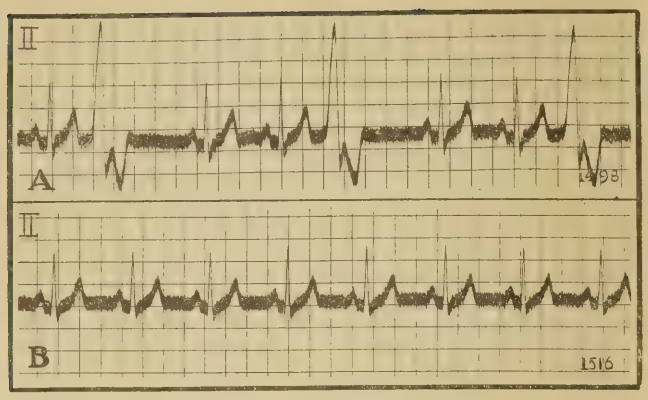

Fig. 1, Case I.—Upper record shows three irregular heart beats caused by premature systoles (originating in the right ventricle). Three weeks after the removal of six alveolar abscesses, the heart action became perfectly regular, as shown in the lower record.

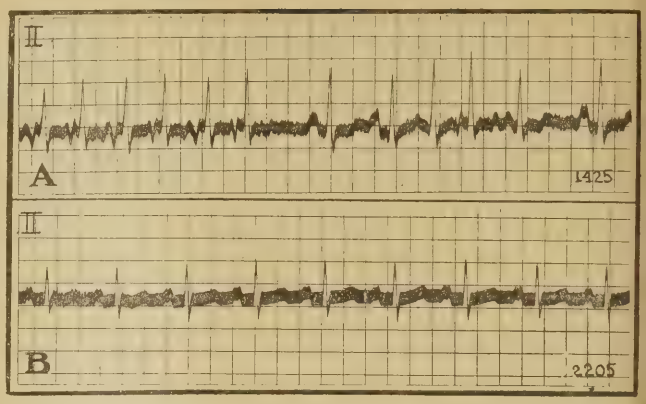

Fig. 2, Case II.—Upper record shows several irregular heart beats caused by premature systoles (originating in an auricle). Five alveolar abscesses were removed and two years later the heart action became perfectly regular, as shown in the lower record.

any circumstance which increases the heart rate will usually cause irregularities to diminish or disappear. Of course anesthesia stimulation or wound absorption increases the heart rate. Therefore, in order to avoid the obvious deduction of temporary stimulation improvement, in this series the heart records exhibiting improvement were not taken until sufficient time had elapsed, following dental relief, for the heart to be persistently regular—the intervals being from three weeks to two years.

6. Premature systoles—which are variously termed extrasystoles, dropped beats, intermittent pulse, and other names—is the type of irregularity which has been chosen to illustrate this group of cases. This irregularity is so graphic that he who runs may read the disturbance in rate and the break in rhythm which premature systoles induce—an irregularity that is in striking contrast with the returned to normal records that are as rhythmical and regularly recurring in design as a Greek fret.

SYNOPSIS OF CASES

Case I.—A muscularly powerful man of forty years, of the stocky, athletic type, was rejected by an insurance company on account of a frequently irregular heart action.

The cardiophysical examination revealed no abnormality other than the irregularity which was constant under all circumstances of test, such as before and after exercise, when mentally stimulated and when dozing. The cardiographic records proved the irregularity to be due to premature systoles originating in the right ventricle (Fig. 1).

Four of the patient's teeth contained large central fillings, and dentoradiograms revealed rarifactions at the apices of all four, as well as at the roots of two other teeth which had not been clinically suspected.

The patient, indiscreetly, had all six teeth removed at one sitting; fortunately, there was no untoward physical reaction following such wholesale extraction.

Within ten days the irregularity diminished and after three weeks the heart action became perfectly regular and has remained so to date, over a period of two years.

Case II.—A jurist, sixty years of age, was referred by an exodontist who declined to operate until he knew the type of irregular pulse which the patient presented.

The cardiophysical examination revealed a pulse frequently irregular but interspersed with periods of very rapid, regularly recurring beats, a definite increase in the transverse diameter of the heart and there were râles at the base of the left lung posteriorly. In the patient there was developing shortness of breath on accustomed effort, he became lightheaded on sudden change of posture and was readily fatigued.

The cardiographic records proved the irregularity to be due to premature systoles arising in an auricle (Fig. 2); at times these premature systoles occurred for many successive beats, thus inducing periods of true paroxysmal tachycardia of auricular origin.

Five of the patient's teeth on x ray examination were found to have rarefactions at the apices. After extraction these teeth were examined bacteriologically and the cultures were found to contain Streptococcus viridans. While marked clinical improvement followed dental extraction within six weeks, the irregularity showed no change for six months; it then steadily diminished in frequency and two years later the heart action became perfectly regular.

Case III—A robust mining engineer of twenty-nine was referred for cardiovascular study because the rate of the heart was 80 beats a minute, while the radial rate was only 40 beats a minute.

The cardiophysical examination sustained these findings, but revealed no additional abnormality. The patient complained of shortness of breath, early fatigue and precordial distress.

The cardiographic records proved the radial deficit of 40 beats to be due to premature systoles which alternated in regular occurrence between normal beats. The premature beat occurred so closely following a regular beat, that the ventricle did not contract on an amount of blood sufficient to lift the aortic cusps, and thus failed to propagate a pulse to the wrist. This regular recurrence of an irregularity (Fig. 3) persisted under all circumstances of test.

Four of the patient's teeth, on x ray examination, were found to have rarefactions at the apices. These four teeth were removed, and four months later the irregularity had diminished perhaps thirty per cent. The patient decided to have a fifth tooth removed which was centrally filled. A large granuloma was found attached to the root, but had not been revealed by the x ray. One year following

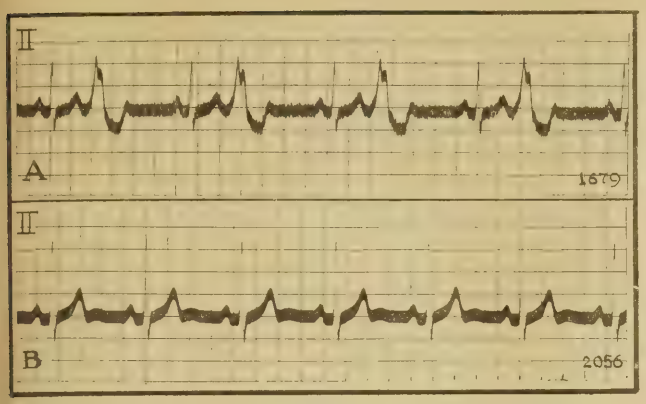

FIG. 3, Case III.—Upper record shows four irregular heart beats caused by premature systoles (originating in the right ventricle). One year after the removal of six alveolar abscesses, the heart action of this patient became perfectly regular, as is shown in the lower record.

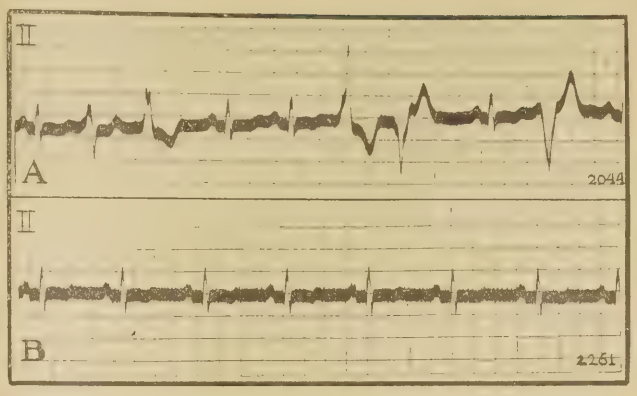

FIG. 4, Case IV.—Upper record shows five irregular heart beats caused by premature systoles (originating in the tissue between the right auricle and ventricle). Three months after the removal of four alveolar abscesses, the heart action became perfectly regular, as shown in the lower record.

the original dental extractions the heart action became perfectly normal.

CASE IV.—A slender delicate woman of perhaps thirty-five years complained that she was unable to play tennis on account of violent thumping and skipping of her heart, which produced pain in her chest. The cardiophysical examination revealed no abnormality other than the irregularity above mentioned. The patient was steadily growing shorter of breath, she tired easily and had intervals of faraway sensations.

The cardiographic records proved the irregularity to be due to multiple premature systoles, originating in the node which is situated between the right auricle and ventricle (Fig. 4).

Four of the patient's teeth contained large central fillings, and dentoradiograms revealed slight rarefactions at the apices. The idea of dental extraction was repugnant to the patient and she declined to have the suspected teeth removed. For three months she was confined to her home as a cardiac invalid, temporizing with what proved to be one therapeutic fantasy after another. In desperation, the four suspected teeth were finally extracted, and within three months thereafter the heart action became perfectly regular.

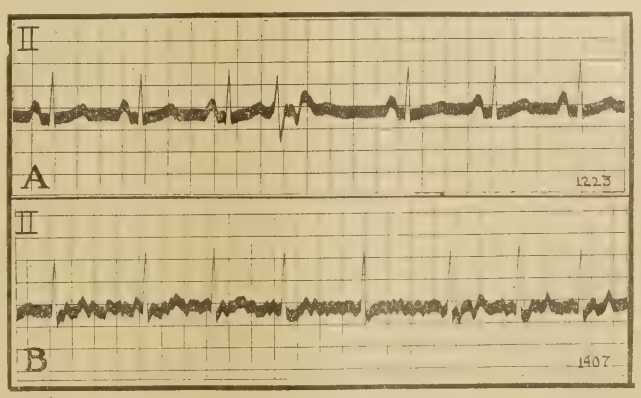

FIG. 5, Case V.—Upper record shows a single irregular heart beat caused by a premature systole (originating in the right ventricle). Dental x rays indicated that two alveolar abscesses were present, but they were not removed. Four months later profound heart damage ensued, as evidenced by the total irregularity of auricular fibrillation shown in the lower record.

CASE V.—A physician of mature years and extensive clinical experience requested cardiovascular survey for what he termed "an extrasystolic arrhythmia."

The cardiophysical examination revealed no abnormality other than a very occasional irregularity. The patient complained of tiring easily, of growing mentally sluggish and his gait and actions were hesitant.

The cardiographic records proved the irregularity to be due to an occasional premature systole originating in the right ventricle (Fig. 5).

Two of the patient's teeth, which were abutments for dental bridge work, were found by dentoradiographic study to have rarefactions at the apices. He stoutly declined to part with these probably infective roots, on the absurd reasoning that their removal would necessitate a complete set of teeth for the lower jaw.

Four months later the premature systoles had disappeared, but in their place was substituted the absolutely complete irregularity of auricular fibrillation, which, having once started in a person of his years, will likely become permanently established, despite any efforts at relief.

THE HEART MUSCLE SIGNIFICANCE OF PREMATURE SYSTOLES

As previously stated, the irregularities discussed in this paper are confined only to premature systoles. It is appropriate for us to inquire at this juncture, what may be the heart muscle significance of premature systoles? They are seriously regarded when they occur during the course of an acute illness; but in persons otherwise healthy who are up and about the premature systole is often disposed of with a gesture of inconsequence. We all know that this type of irregularity in some patients seems to be quite harmless, and this seems to be the accepted view, judging from the number of patients who in the past have been told "oh your heart is all right—you have just a dropped beat occasionally."

I am quite in accord with the idea that an occasional premature systole, by itself considered, is not indicative of actual structural heart muscle defect. On the other hand, this seemingly simple, occasional heart irregularity has been known to proceed with almost lightninglike rapidity to a multiple frequency where it interfered with the proper distribution of the

blood supply, and from that improper distribution, symptoms of heart failure have ensued and the patients have become cardiac invalids. It has also been noted that the seemingly simple irregularity may at any time change into a more serious type of heart irregularity, such as auricular fibrillation. Hence it is not only unscientific but actually unsafe to reassure a patient with the statement that "you have only extrasystoles." Too often it is a warning signal of heart protest. It is our duty to search for the underlying cause which makes the heart display the danger signal of irregularity. Such a search should not fail to include x ray and dental study of the teeth, for a symptom free abscess may be hidden and unrecognized at the apices of any one of the forty-six roots in the jaws.

A SIGN THAT INFLUENCES THE PROGNOSIS IN PREMATURE SYSTOLES

When attempting to appraise the clinical significance of premature systoles, an aid of considerable diagnostic importance can be found in the behavior of the irregularity before and after exercise. A premature beat that is present during periods of rest and which *disappears* when the heart rate is speeded up by mental, emotional or physical activity is, I believe, more indicative of *toxic* heart disturbance than of actual structural (organic) heart muscle involvement. On the other hand, when the irregularity *increases* in frequency following mental, emotional or physical activity, I believe it safe to regard such behavior as indicative of *structural* (organic) heart muscle involvement. If this sign has been previously described, I am not aware of it.

From these observations it is evident that the premature systole which is of toxic origin is quite likely to disappear when a toxic cause is found and removed. It is also equally evident that premature systoles which are probably due to structural heart muscle defect will not disappear with the removal of a toxic cause. But let us bear in mind that the search for and the removal of a toxic source, even in a permanently damaged heart, may prevent that heart from becoming progressively worse as the years advance. Therefore, in a patient in whom premature systoles occur, the removal of a toxic source may prevent additional heart defect in the future life of that patient, and affords us some assurance that a damaged heart will retain such efficiency as is compatible with the age of the subject.

SUMMARY

1. Heart irregularities will sometimes disappear when peridental abscesses are identified and surgically removed.

2. The x ray is of assistance in identifying peridental abscesses, but it cannot supplant thorough clinical examination and exhaustive tooth vitality tests at the hands of a modern dentist.

3. A dentoradiogram that fails to show rarifications should not lead the physician to absolve the teeth from blame when tracing the cause of heart abnormality. Clinical dental examination is necessary.

4. Should a dentoradiogram present suspicious rarefactions, the accused teeth should be subjected to a clinical dental examination.

5. A peridental abscess which is determined to be present by x ray and by clinical studies admits of no compromise. That abscess should be surgically removed, even though the removal of the abscess means the removal of the tooth. It is unscientific to assume that an abscess can be treated through a small opening in a tooth and thus rendered harmless permanently. The physician who has charge of the health of a patient should not countenance such a temporizing maneuvre which is always inimical to and very frequently jeopardizes the heart integrity of that patient.

6. The form of heart irregularity which occurs with the greatest frequency in association with periapical dental abscesses is the irregularity known as the premature systole. In the general run of patients who are concerned about their hearts and who as yet are not in any sense cardiac invalids, the premature systole is the irregularity most likely to be present.

7. A study of the heart is incomplete without radiographic and clinical studies of the teeth.

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Influence of the Soft Parts Upon Blood Pressure

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While studying blood pressure of the brachial, femoral, and posterior tibial arteries in cases of aortic regurgitation, the question arose whether or not there were discrepancies in the high systolic readings in the thigh just above the knee. Together with the sparsity of experimental data in the literature this led to the following investigations to determine what effect the soft parts of a limb have upon its blood pressure determinations.

Janeway (1) quotes Von Recklinghausen who demonstrated that with a sufficiently wide arm piece the size of the limb and the degree of its development made no difference in the accuracy of blood pressure readings. Muller and Blaud made direct pressure determinations in three operative cases and found them nine to ten mm. less than readings taken with the cuff. The narrow arm piece and Gartner's method made large errors. Henson had a case of marked muscular atrophy of one arm, but the pressure in both was the same.

Janeway cites two cases demonstrating that the factor of soft parts does not have any effect. Discrepancies between clinical blood pressure estimations and direct manometric readings from the same limb must be explained either by resistance to compressior of arterial wall or by errors in readings.

Case I.—Carpenter, fifty-seven years of age, cardionephritic, one arm measured thirty cm. in circumference, the other arm (flaccid) 21.5 cm. in circumference. Blood pressure in both 300/180 mm.

Case II.—Lumberman, fifty years of age, a 331 pound man whose arm measured thirty-nine cm. in circumference, had a systolic pressure of 115 mm.

Cabot (2) says, "It is true that the air within the rubber armlet has to overcome not only the pressure within the radial artery but the resistance of the artery wall and the elasticity of the soft parts around it." The former factor has been shown to represent a pressure of not more than two to three mm. mercury provided the artery walls are normal. If arteriosclerosis is present, it has been estimated by Herringham that the artery may oppose a resistance of fifteen to twenty mm. mercury. The more carefully conducted experiments of Janeway, however, show that Herringham is wrong and that sclerosed arteries offer a direct resistance of less than five mm. mercury. The amount of error this introduced is not of importance.

The resistance of the soft parts around the artery is a factor of no importance provided the compressing armlet is at least twelve cm. wide. A large arm gives no higher reading than a shrivelled one, as has been shown by Janeway in a patient, one of whose arms was congenitally atrophied while the other was enormous.

BRACHIAL, FEMORAL AND POSTERIOR TIBIAL BLOOD PRESSURES AS REGARDS THE CIRCUMFERENCE OF THE RESPECTIVE LIMBS.

Case	*Limb*	*B.P.*	*Circum.*	*Limb*	*B.P.*	*Circum.*	*Limb*	*B.P.*	*Circum.*
1.	R. Arm	105/70	25.5 cm.	R. Thigh	120/80	40 cm.			
	L. "	105/70	25 cm.	L. "	125/85	38.6 cm.			
2.	R. "	135/80	26.2 cm.	R. "	140/95	37.5 cm.	R. Leg	110	23.7 cm.
3.	R. "	120/60	18 cm.	R. "	130/80	29.3 cm.	R. "	85	17.5 cm.
4.	R. "	105/55	17.5 cm.	R. "	130/80	31.2 cm.	R. "	105	19.2 cm.
5.	R. "	110/70	25.7 cm.	R. "	120/80	42.5 cm.			
6.	R. "	220/115	33.5 cm.	R. "	315+/130	45 cm.	R. "	260	25 cm.
7.	R. "	225/110	19.2 cm.	R. "	315+/130	36.2 cm.	R. "	260	21.2 cm.
8.	R. "	135/50	21.7 cm.	R. "	220/60	43.5 cm.	R. "	130	23 cm.

In this experiment the first five cases with normal cardiovascular systems showed no very appreciable increase in blood pressures as compared with the quite marked difference in size of soft parts. All blood pressures were taken with the patient in a prone position. The last three were known to be cases of aortic regurgitation and as one would expect, the systolic pressure in both the thigh and leg were increased over that of the arm, but not in any definite proportion to the size of the soft parts in the respective limbs. These facts would seem to indicate that the soft parts do not play any part in affecting blood pressure readings, in either the arms or legs. In a series of twelve cases free from aortic regurgitation and aortic aneurysm, blood pressures on the arms and legs were taken with the patient in a prone position. All showed readings similar to the first five cases noted above, i. e., there was a rise from five to twenty points noted in the systolic pressure of the femoral over that of the brachial artery, but the diastolic pressure in the femoral artery always equaled that in the brachial artery.

However, to investigate further the effect of the soft parts of a limb upon blood pressure, the following experiment was devised so that the same limb might be used but the size of the soft parts changed in each case and withal closely approximating conditions in nature.

A piece of skin with fat attached was dissected from a freshly amputated leg above the knee. It measured 31.2 cm. by 17.5 cm. weighing 850 grams. By means of a single wrapping with thin brown rubber dam secured at the free edges with narrow strips of adhesive plaster, the exact nature of the poultice remained an unknown quantity to the patient upon whom it was used. The posture of the patient while the three readings were taken in each case remained the same, either in an erect position, prone, or leaning against a backrest.

A STUDY OF BRACHIAL BLOOD PRESSURES WITH REGARD TO A VARYING SIZE OF SOFT PARTS.

Case	*Age yrs.*	*B.P.*	*Cir. of Arm*	*Layer of Fat about Arm, Cir.*	*After experiment B.P.*
1.	14	100/65	16.5 cms	110/75 33.5 cms	100/65
2.	32	90/55	26.2 "	100/60 37.5 "	100/62
3.	26	120/70	25.5 "	120/65 36.7 "	125/75
4.	15	105/55	17.5 "	115/65 31.2 "	110/60
5.	27	100/70	28.7 "	110/75 38 "	110/70
6.	29	100/60	27.5 "	105/65 37.5 "	105/65
7.	31	115/60	22.5 "	120/65 34 "	115/60
8.	31	120/35	26.2 "	120/35 37.5 "	120/35
9.	50	180/100	26.2 "	170/90 35 "	170/90
10.	12	80/40	17.5 "	90/45 31.2 "	85/45
11.	11	85/35	18.7 "	90/45 32.5 "	85/40
12.	66	110/60	22 "	120/70 33 "	110/60

In this experiment quite striking results were obtained as can be seen from the accompanying table. Ten points in both systolic and diastolic pressures was the greatest increase with the use of the pad of fat wrapped about the arm. In the first case the arm was made twice as great in circumference and yet the blood pressure reading was only ten points higher in both systolic and diastolic readings. In one case it was lower, in another it was exactly the same and in the remaining the difference was negligible. This can be explained only by the fact that animal tissue is composed of cells containing fluid which transmits pressure equally in all directions, a hydrostatic pressure, and that thus, a large arm or leg will give the same blood pressure readings as a small one in the same individual. In conclusion, then, blood pressure in the arms and legs is the function of the resistance of vessel wall (which is taken to be slight), vascular tonus and cardiac systole, and, as such is read for clinical purposes accurately by

means of a mercury manometer no matter what the size of the limb may be provided the arm band is of sufficient width.

Hence, this experiment is of practical importance to the clinician for it has been proved that the size of a limb does not materially alter its blood pressure. Especially is this of value in taking readings in cases of aortic regurgitations in the thigh above the knee where limbs of greatest circumference are encountered.

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Calcified Pericardium Occurring in a Patient with Peptic Ulcer*

Report of a Case

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Case.—Mr. W. W., thirty-nine, a chauffeur, was admitted to the medical ward of Michael Reese Hospital February 4, 1924. The chief complaint was epigastric pain of five weeks' duration. There had been four previous attacks of similar nature beginning in December, 1922. The attacks came at irregular intervals of a few months and lasted from three to six weeks. The pain was of a burning character, and often seemed like "a sponge swelling up." The analysis of a typical day revealed the fact that there was no distress when the stomach was empty, but that the distress followed immediately after food taking, and that it radiated up the esophagus.

Associated with the epigastric distress were dizziness and fainting spells. Loss of weight of sixteen pounds in five weeks had occurred. There were slight productive cough and shortness of breath on exertion, and occasionally precordial pain.

In the past the patient had had measles, scarlet fever, chickenpox, tonsillitis, influenza three times, and frequent colds. There had been an operation for bilateral inguinal hernia. The family history was negative.

Physical examination revealed a male, well developed and nourished. The pupils were negative. The lungs were negative. The apex beat was not visible or palpable. No cardiac enlargement could be detected on percussion, and there were no murmurs or adventitious sounds. The pulses were equal, regular and synchronous with the apex sound. The abdomen, extremities and reflexes were normal.

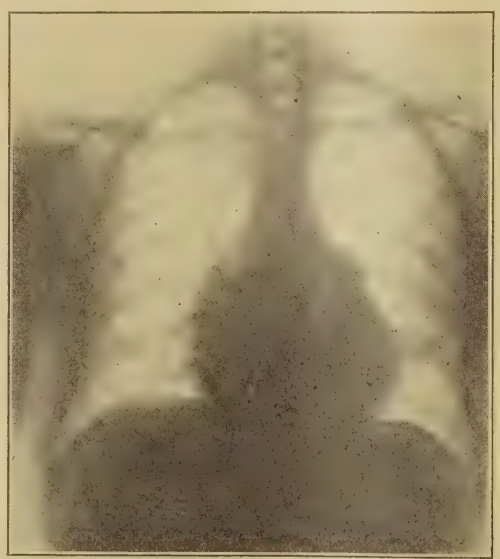

Fig. 1.—Radiograph showing calcified pericardium.

The blood examination showed a hemoglobin of seventy-five per cent. and normal white, red, and differential counts. The blood pressure was 120 systolic, 100 diastolic. The Wassermann reaction was negative. The urine contained a slight amount of albumin. The stools showed no blood. Ewald and motor meals were within the range of normal findings. The sputum was negative for acid fast organisms. The electrocardiogram was negative.

The report upon the röntgenological examinations by Dr. R. A. Arens is as follows: "The heart appears pathological, taking on the globular appearance of a pericarditis. The pericardium apparently contains dense material, which appears to be calcified deposit. Both lung fields show no special pathological condition. The diaphragm is sharp and clear and the angles are free from fluid. The films confirm the fluoroscopic finding of calcification of the pericardium. Röntgenological examination revealed a defect of the duodenal bulb."

In the hospital the epigastric distress, which was the complaint which brought the patient to the hospital, disappeared under dietary and alkaline therapy. He was discharged on March 2, 1924, but was admitted four days later with symptoms of bowel irritation and tenesmus, which disappeared upon adjustment of the alkaline therapy.

While the symptoms were not absolutely typical of peptic ulcer, the presence of positive röntgenological findings for duodenal ulcer, and the fact that the epigastric distress was relieved by ulcer management indicate that the diagnosis of duodenal ulcer was correct. It is probable that the chief complaints were due to the duodenal ulcer, rather than to the condition of the pericardium.

Concerning the probable etiology of the calcified pericardium there are at least two possibilities. The first, that it may have been due to a tuberculous polyserositis, may be dismissed because of lack of confirmatory findings. The second, that the calcified pericardium may have been the result of an acute pericarditis followed by fibrosis and adhesion at the time of one of his numerous previous illnesses, seems probable.

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Pulse and Blood Pressure Variations During Exercise and Their Bearing on Myocardial Efficiency

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This work was begun while I was in charge of the D. A. H. centre, Featherston Military Hospital, New Zealand, and carried on later at the Trentham Military Hospital. Patients suffering from D. A. H. present many subjective symptoms, the effort syndrome of Lewis (1), but few objective signs, and it was desired to devise some means whereby patients admitted with this diagnosis could be tested and classified objectively.

Observation of blood pressure and pulse changes during and after a measured exercise was undertaken and from these a general measure of the condition, and, more particularly, of the cardiac reserve power, obtained.

At the outset a word of warning is necessary. As pointed out by Norris (2), blood pressure methods of determining circulatory efficiency "are based on sound theoretic principles and would be invaluable if our instrumental methods were sufficiently exact and comprehensive . . . unfortunately, however, the data obtainable by sphygmomanometry are, even when collated with the utmost care, subject to unavoidable sources of error."

This has been recognized, and in this paper no elaborate arithmetical calculations have been attempted, nor has there been any endeavor to reduce blood pressure and pulse relationships to an algebraic formula. I estimate that in my own readings the limit of error in records of pulse rate is plus or minus four; in records of systolic pressure, of plus or minus two; in records of diastolic pressure, of plus or minus four and a half. As will be noted subsequently in this article these possibilities for error do not destroy the value of the work done, nor invalidate the conclusions drawn.

A further objection is pointed out by Dr. G. A. Sutherland (3), who discussing cardiovascular debility in aviation candidates, remarks that the myocardial factor is not the only one concerned in pulse and blood pressure changes during exercise, and that the main factors to be considered are these: effects of exercise upon 1, the cardiovascular system; 2, the respiratory muscles; 3, the muscles involved in performing the particular exercise; 4, the pulmonary organs, and 5, the nervous coordinating and controlling centre. Again, Ch. Laubry (4) refers to work on this subject by many French investigators and concludes that "tachycardia and arterial tension result from conditions too numerous to draw from their variations an absolute conclusion on the functional capacity of the heart."

This is freely conceded, but it must be observed that these same and differing factors are concerned also in the patient's performance of his everyday work and that the test of exercise tolerance is really designed to investigate his capacity for doing work. In the carrying out of that work a first necessity is the maintenance of an efficient blood supply to the tissues, and the tests carried out give an indication of the power of the subject, acted on, if you will, by all five forces mentioned above, to produce, and to maintain, such an efficient blood supply.

The inspiration for the work undertaken in the present investigation, and suggestion as to the manner of its being carried out, came in greater part from an article by Dr. J. Strickland Goodall (5) entitled The Estimation of Myocardial Efficiency. This article is based on the assumption "that the measure of a heart's efficiency is its capacity for doing work."

Goodall describes four methods of testing this capacity. 1. The Simple Stair Test. In this the patient is made to do a definite amount of work in a given time, pulse, blood pressure, and respiration readings being taken immediately before and immediately after exercise, and after definite intervals of rest. Such a test consisted in making the patient raise his body weight twenty feet in thirty seconds (by running up a flight of stairs). Pulse, blood pressure, and respirations should return to normal at the end of three minutes.

The results are classified thus: 1. Good reactions; pulse, blood pressure, and respirations all increase on exercise and have returned to normal at the end of three minutes' rest. 2. Fair reactions; pulse, blood pressure, and respirations increase but have not returned to normal in three minutes. 3. Bad reactions; pulse and respirations rise, blood pressure does not increase. 4. Very bad reactions; pulse and respirations increase, but blood pressure falls. This test is an amplification of one originally described by Graupner (6), and often referred to as the Graupner test.

Following Goodall, Gordon Lambert (7) used this test but his exercise standard is not defined, and he quotes four cases only. He lays little stress on readings of diastolic pressure (not referred to by Goodall) but it is interesting to note that rises in diastolic pressure after exercise were slight, and that in one case he records a fall in diastolic pressure following exercise.

Goodall's second and third tests are for cases for whom the first test would be too severe. They have not been used in this investigation.

The fourth test described by Goodall is that which he calls the progressive exercise reaction. This is carried out exactly the same way as the simple stair test, only that the work is continued until the blood pressure ceases to rise. "This is the point at which the heart is just about to dilate." It is this test, of tolerance to progressive exercise, which has been mainly used by the writer of this paper, although in the earlier series, comprising some fifty or more cases, the simple stair test (Graupner) was employed.

The degree of disability suffered by most of the patients (all had had the advantage of the return voyage to New Zealand) was not great, and the majority gave reactions of the second type pulse respirations and blood pressure (systolic) increased by

exercise, and returning to normal after varying intervals (longer than three minutes).

Accordingly the more prolonged and searching fourth test—the progressive exercise reaction—was undertaken. The actual method of carrying out this test is not given by Goodall but it is imagined that some such method of periodically sampling blood pressure and pulse changes during the course of the exercise must have been employed by that writer. So far as can be ascertained from the literature available, no other investigator has either recommended or carried out just such a series of tests.

Other tests, using the blood pressure readings for the determination of circulatory efficiency, are described by Norris (8). Many of them are involved mathematically to a degree unwarranted by the unavoidable limits of error in taking the various readings. Such are determinations of blood pressure quotient, energy index, amplitude frequency product, and use of the Strassburg formula, or Erlanger and Hooker's formula. Norris recommends most highly a test described by Crampton for the determination of vasomotor efficiency. This last test itself, and my experience of it, are described below.

At this point, and before a detailed discussion of the results obtained is undertaken, the method of sphygmomanometry used may be briefly described.

Two instruments were used, a Pachon instrument with oscillometer, and a Lauder Brunton sphygmomanometer. In both instruments the pressure is recorded on a dial by means of an anaeroid, but both were kept standardized against a Riva-Rocci sphygmomanometer, with mercury column, and were found not to vary. In all cases the readings were made by the falling pressure after overstepping the obliteration of the pulse as recommended by Olliver (9). The auscultatory method (checked against the tactile for systolic readings) was used (*vide* Olliver) (10). The point determined as diastolic pressure was that at which the loud and clear note of the third phase became suddenly muffled to pass in to the fourth phase. Occasionally this change was so gradual that no diastolic reading could be obtained. This usually happened in a vigorous subject with the arterioles well dilated and the pulse beating 140 or more a minute.

No effort was made to determine or compare the length of the various phases. Where a test required two or more readings, the cuff, which was placed level with the heart, was left on throughout the test. All readings were taken with the patient lying, unless otherwise noted. The right arm was used more often than the left, but not for any special reason.

The difference between the values for systolic and diastolic pressures measures the rise of pressure in the versel due to the pulse wave. This is referred to as the pulse pressure (Olliver) (11). The leading factors in its production are "the force and duration of the ventricular contraction and the amount of peripheral resistance" (Olliver). Pulse pressure is also an index "of the volume of blood supplied to the organs per unit of time." No apology is necessary for the stress laid on pulse pressure changes in later portions of this paper (12).

The first series of experimental work to be described is that dealing with Crampton's test of vasomotor efficiency.

In this test use is made of the fact that in rising from the recumbent to the erect posture the tendency of blood pressure to fall as a result of gravity is corrected by an increase in vasomotor tone and (or) an increase in cardiac work. A lowered vasomotor tone means a greater increase in pulse rate and *vice versa*. Pulse and blood pressure readings are taken with the subject lying, and again after standing erect. Crampton has performed this test on a great number of persons and from his observations has constructed a scale. In this he makes those cases show one hundred per cent. efficiency in whom the rise in pulse rate is 0 to 4 a minute, and rise in systolic pressure equal to 0 to 10 mm. of mercury. Variations in pulse rate and systolic pressure are plotted to indicate various percentages of the optimum efficiency. The zero efficiency is at that point where the pulse rate increases from 41 to 44 a minute and the systolic pressure fall is equivalent to 10 mm. of mercury. This is the point at which the average person is unable to maintain the erect posture. No account is taken by Crampton of diastolic pressure changes. It is pointed out by Faught (13) that in normal persons the result of change of posture from lying to standing is that systolic pressure tends to fall, diastolic pressure to rise, giving a fall in pulse pressure.

This writer has records of having carried this test seventy-five times, ten times on fit subjects (young gymnastic instructors who were taking a refresher course), the remainder on patients all complaining of symptoms suggesting more or less loss of cardiac efficiency. The results vary widely. Of the ten normal subjects (Table A) in only one case was there a fall in systolic pressure in rising to the standing position and this was so small (=3 mm. of mercury) as to be within the limits of error. Increases in diastolic pressure were from 0 to 22 mm. of mercury and decreases in pulse pressure from 0 to 20 mm. of mercury.

It is apparent that pulse pressure changes, which, as has been shown, are in a great measure an index of the rate of blood flow, bear little or no relation to vasomotor efficiency as shown by Crampton's scale.

Sixty-five tests on patients with symptoms referable to cardiovascular debility showed wide variations —Tables B and C.

TABLE B

Sixty-five Cases with Diminished Cardiovascular Efficiency

Variation in changes	*Increase*		*Decrease*
Pulse rate	+40	to	—16
Systolic pressure	+25	to	—25
Diastolic pressure	+25	to	— 5
Pulse pressure	+20	to	—40

TABLE C

Distribution of Cases Referred to in Table B

Pulse rate changes	*Number of cases*	*Average variation in systolic blood pressure*	*Average variation in pulse pressure*
—16	1	+15	+13
—12 to 0	10	+ 5.2	— 3.2
+ 1 to +12	29	— 3.4	—12.5
+13 to +24	16	+ 1.6	— 5.0
+25 to +36	8	— 6.9	—15.0
+37 to +40	1	—10.0	—18.0

The only uniformity—remarked in both fit and unfit subjects—is that diastolic pressure is higher in the standing position, and pulse pressure almost uniformly lower, although there is in general a rise in pulse rate. Put conversely, the adoption of recum-

bent position results in a rise in the pulse pressure and a lowering in pulse rate, that is, the work of the heart is lessened and the blood supply to the organs is increased. The former, i. e., lessening of cardiac work, has long been recognized as providing a rational basis for rest in bed, but the latter, i. e., diminished peripheral resistance with increased blood flow has not, as far as I am able to ascertain, been remarked upon previously.

The application of Crampton's test to individual cases has shown no clear connection between readings obtained and the observed clinical condition, nor the relative capacity to perform work as measured by other means. Of course this test is only recommended as one for determination of vasomotor efficiency, and it is not impossible that the presence of other factors may determine a poor cardiac reserve where the vasomotor tone is relatively unimpaired and vice versa.

TABLE A

TEN NORMAL SUBJECTS, FROM LYING TO STANDING

Variations in	1	2	3	4	5	6	7	8	9	10	*Average*
Pulse rate	—8	+10	+12	+12	0	+ 4	+12	+12	— 4	+18	+ 6.8
Diastolic pressure	0	+10	+10	+22	+20	+10	+15	+15	+20	+ 5	+12.5
Systolic pressure	—3	0	+10	+10	0	+ 5	+ 3	+ 5	+ 7	0	+ 3.7
Pulse pressure	—3	—10	0	—12	—20	— 5	—12	—10	—13	— 5	— 8.8
Efficiency on Crampton's scale (per cent.)	70	65	90	90	75	85	70	75	90	55	80

It may be of interest to record a few cases where the test was done soon after admission, and again some weeks later when the condition had improved sufficiently to warrant discharge (Table D).

As the patient's condition improves there is less fall in pulse pressure, but the amount of fall (both relative and absolute) is not proportional to the observed amount of improvement in the patient's condition.

Although in my hands this test has given somewhat anomalous results, I would not therefore condemn it as being of no value. It certainly gives an indication of vasomotor efficiency, and comparison of readings taken from time to time in course of treatment of a patient would probably assist in determining the progress of his condition.

The method of estimating myocardial efficiency finally adopted was that described by Goodall as the progressive exercise reaction and already referred to.

The manner of carrying out this test will now be briefly described. The unit exercise was that evolved for the earlier (Graupner) test and consisted in making the patient step up and down from a chair thirty times in sixty seconds. The chair was of a pattern in common use in the hospital wards. To step up on to the chair involved lifting the body weight through one and a half feet so that the unit exercise caused the subject to lift his body weight through forty-five feet in sixty seconds, or a little more than double the exercise (twenty feet in thirty seconds) suggested by Goodall. From the data the actual work in foot pounds could be calculated.

This work was done after the war and all cases examined were exsoldiers. Surprisingly little difficulty was found in maintaining a uniform rate of movement. Probably this was due to the fact that the rate, left, right, on to the chair, left, right, back to the floor, was that (120 to the minute) of the ordinary marching pace, although it was chosen in the first place quite by chance.

This formed the single exercise of the simple stair test, and the exercise unit of the progressive test.

The actual procedure was as follows: the subject, who had previously undergone a complete physical examination, was stripped of his coat, waistcoat, shirt, and in warm weather, singlet. He was made to lie down on a bed or couch, and readings of pulse rate and systolic and diastolic blood pressure taken. The pulse was counted by the ward sister and the blood pressure readings taken by me. All readings were immediately written down, and any apparently anomalous values checked by repeating the readings.

TABLE D

CASES TESTED FROM LYING TO STANDING, FIRST, ON ADMISSION, AND SECOND, ON DISCHARGE

	Pte. F. Mitral Stenosis (I)	(2)	*Pte. McL. D. A. H.* (I)	(2)	*Pte. B. D. A. H.* (I)	(2)	*Rfn. N. D. A. H.* (I)	(2)	*Pte. P. D. A. H.* (I)	(2)	*Pte. M. Myocard. Degen* (I)	(2)	*Pte. N. Hyper-Thyroidism* (I)	(2)	*Pte. H. Arterio-Sclerosis* (I)	(2)	*Spr. W. Mitral Stenosis* (I)	(2)
Pulse rate variations	+ 5	+ 8	+16	+28	+24	+18	— 4	+12	+28	+32	+24	+ 4	+28	+ 4	+ 4	+ 8	+ 4	+12
Diastolic pressure variations	+ 5	+15	+16	+ 5	+13	+ 5	+15	+ 5	+ 7	+ 5	+15	+12	+10	+ 7	0	+ 5	+ 8	+10
Systolic pressure variations	—10	+ 5	0	— 5	—20	—10	— 5	—10	—15	—15	—15	—10	—25	— 5	+10	+ 5	—20	—15
Pulse pressure variations	—15	—10	—16	—10	—25	—23	—20	—15	—22	—10	—30	—22	—35	—12	+10	0	—28	—25
Efficiency on Crampton's scale (per cent.)	45	80	60	35	25	30	65	40	20	15	25	50	15	65	100	80	40	35

Generally these happened together. A record of the time taken was noted, a physical examination of the heart made to detect abnormality of sound or rhythm, hyperesthesia of the precordia looked for, and a note made of the patient's subjective symptoms.

After three minutes' rest, lying, further readings were taken, and again after further intervals of rest, if this seemed desirable.

With a little care the rate—one minute exercise, half a minute for readings—could be maintained

No count was taken of respiration values as this was found to unduly prolong the rests during the performance of the exercise. After the readings of the subject at rest were taken, he was instructed in the method of carrying out the exercise. The time was noted, and unit exercise (thirty times) performed. The patient immediately lay down and readings were taken. This interval usually lasted thirty seconds. The exercise was immediately repeated and another reading taken. Again and again would the exercise unit be carried out until readings showed a falling systolic and pulse rate pressure, or the patient showed signs of considerable distress.

throughout, but a record was kept of the time as the exercise progressed.

A close watch was kept on the subject during exercise and a note made of any complaints. In this way was gained much useful information as to the power to perform work quite apart from a consideration of the series of the readings. Complaints of distress, giddiness, etc., were checked against the actual readings, and a fearful subject reassured that his heart was still acting soundly.

The body weight was known, the height through which it was lifted could be ascertained, and thus a measure of the work done was expressed in foot pounds. There was one error common to all readings, that the centre of gravity of the body was not actually raised through one and a half feet because the attitude of the subject when standing on the chair was somewhat crouching. All patients adopted the same attitude and the one effect of the error is that the actual work done is slightly less than that calculated.

One further fact must be noted, that the readings taken at the end of each exercise are taken so soon after lying down that they are practically valueless for the upright position. Provided that this fact is realized during consideration of the results obtained, it will not invalidate any of the conclusions drawn.

All records were taken between the hours of ten and twelve in the morning and two and four in the afternoon, not within two hours of the last meal, nor within an hour of the graduated exercise, which finished at 8:30 a. m. All patients were examined in a resting condition, so that the results are strictly comparable and not vitiated by any external factor that could be foreseen.

It is necessary to consider the reaction to exercise shown by normal subjects.

For this purpose there was available a class of young gymnastic instructors of the New Zealand Permanent Forces, who had just finished a six weeks' refresher course, and of these, by the courtesy of Captain A. W. Brocks, M. C., chief physical training instructor, a selection was made. These men were very fit and it was found practically impossible to tire them in a reasonable time at the rate of exercise chosen.

A chart was made giving the result of such an exercise. It showed that the subject was exercised continuously for thirty-seven minutes—in that time carrying out thirty unit exercises, i. e., lifting his body weight through one and a half feet thirty by thirty, nine hundred times, and performing 221,400 foot pounds of work.

Readings in this case were taken after each two unit exercises, i. e., after each sixty lifts, and unfortunately this was one of the cases where difficulty was found in taking the diastolic reading, but otherwise the graphs show certain definite characteristics of the behavior of the normal subject under the stress of exercise.

Both pulse rate and the systolic pressure rise on exercise, but systolic pressure reaches a maximum earlier in exercise than does the pulse rate. Systolic pressure tends to rise to its highest point early in the exercise and then to fall to a certain level which is maintained for the rest of the exercise. As the subject "gets into his stride" the pulse rate also reaches and maintains a certain level. Resting, both systolic pressure and pulse rate rapidly fall—systolic pressure falling markedly below its original level. This extra fall is an indication of the severity of the exercise and when met with after mild exercise it may be taken as a sign of diminished cardiac reserve (Otis) (14).

The line of diastolic pressure is not complete but shows two phenomena which were found to be typical of all tracings from normal subjects. The first is the early fall in diastolic pressure, a fall which is in some degree maintained throughout the exercise. This fall is really greater than is apparent from this and other tracings, as the readings after the first and subsequent exercise units are not compensated for the change from erect to recumbent posture. This unknown factor would, as we have already seen from a consideration of the Crampton test, cause the readings to be higher than if they were fully compensated for the change of posture.

One factor in the production of this fall is, doubtless, the diminution of peripheral resistance caused by the dilatation of the arterioles and capillaries. Possibly also the pulse wave being of greater amplitude may leave a deeper trough behind.

This observed fall is normally not great and is not always present even in persons who are known to be perfectly fit. Some normal cases showed small rises in diastolic pressure, but it is probable that if values had been corrected for change of posture, there would have been an actual fall in all cases, for in every normal subject diastolic pressure observed during exercise remained below that previously determined in the erect posture.

A second phenomenon in connection with the diastolic pressure is the postexercise rise observed. This is constantly present, and is again actually greater than that observed, for the observation was made after three or more minutes lying and a correction for posture would presuppose a decrease in diastolic pressure. The duration of this postexercise rise is variable, but it would appear to be comparatively short.

This rise is not easily accounted for. It is probably a vasomotor phenomenon, producing an increased peripheral resistance, although the systolic pressure is falling. This matter is still under investigation.

These observations do not altogether bear out the results obtained by Lowsley (15) who experimented with young athletes upon a stationary bicycle. The observer found a rise in both systolic and diastolic blood pressure. "The time when the maximum systolic pressure was reached varied from five to twenty-five minutes and the increase amounted to from ten to sixty-five m.m. with an average rise in sixteen minutes of 32.7 m.m." The rise in diastolic pressure varied between zero and forty m.m. Diastolic pressure reached its maximum either at the same time as the systolic pressure or a few minutes later.

In Lowsley's experiments the pulse rate reached its maximum later than did the systolic pressure. The average time for reaching the maximum was 35.4 minutes.

Unfortunately no details of these experiments have been available and the method of measuring and recording blood pressure is not stated. There is a certain amount of presumption that Lowsley's read-

ings of diastolic pressure were taken at the point of disappearance of all sound.

Notwithstanding these results I am satisfied that with an efficient myocardium and stable vasomotor system the typical reaction to exercise is found in a fall in diastolic pressure.

The progressive exercise was carried out on a considerable number of patients and will be known as the Type A exercise, in distinction to a limited and more standardized test which may be distinguished as Type B.

This second type will be described in order that the reaction to it of normal subjects may be considered at this stage. Type B exercise differs only from Type A in being limited to a series of eight unit exercises. It is carried out in the same way as is the former type as far as the first six exercise units (each of thirty lifts) are concerned. The seventh and eighth exercises are combined and the subject encouraged to speed up, the sixty lifts in normal cases being performed in one and a half minutes. The whole exercise takes eleven minutes. As before the readings are taken after intervals of rest.

A summary of the results obtained from nine young (average age, twenty-six years) gymnastic instructors examined at the close of a refresher course shows that the average diastolic pressure of the nine subjects was slightly below the value taken lying down before exercise, and a larger fall below the value taken standing before exercise. Table E shows the individual figures.

TABLE E

Diastolic Pressure Changes in Nine Normal Subjects. Type B. Progressive Exercise.

Case	Diastolic Pressure Resting (a) lying (b) standing	Exercise Units 1	2	3	4	5	6	Extra spurt 7 and 8	After 3 minutes lying
1	(a) 80	85	75	75	85	90	90	85	98
	(b) 100								
2	(a) 80	80	80	80	80	80	85	65	70
	(b) 90								
3	(a) 50	50	55	55	55	60	60	60	52
	(b) 70								
4	(a) 90	90	95	95	97	97	95	75	95
	(b) 100								
5	(a) 68	65	75	75	70	65	65	65	70
	(b) 90								
6	(a) 75	60	55	60	60	55	60	65	60
	(b) 85								
7	(a) 95	85	85	75	85	85	85	70	75
	(b) 100								
8	(a) 90	85	82	78	85	80	75	75	82
	(b) 105								
9	(a) 100	90	90	90	85	85	75	80	100
	(b) 115								
10	(a) 81	77	77	76	78	77	76	71	78
	(b) 96								

It has already been explained that the readings taken during exercise should be compared with the preexercise standing value rather than with the preexercise lying value, but if it be conceded that a mean of these values may be used, it will be seen that as far as the above experiments are concerned the diastolic pressure during the exercise was in one case only (plus two m.m.) above that mean.

The postexercise rise of diastolic pressure is also apparent.

The reaction to the extra spurt shows a tendency to subsequent fall in diastolic pressure with rise in systolic pressure, pulse pressure, and pulse rate. The graph of pulse rate shows an increasing rise with exercise, the nine component curves differing in no respect from the composite one. The component blood pressure curves show fluctuations not indicated on the composite curves, but the fluctuations are not of an order comparable with fluctuations to which pathological significance may be attached later.

There are at least two ways in which these methods of progressive exercise tolerance may be applied to problems of myocardial efficiency. That of most practical value is recommended by Goodall (16) and consists in exercising the patient to the limit of his tolerance. The actual work done, and the time taken, are recorded, and as the condition progresses, further exercise tests show what improvement (or decline) has occurred. The work done, recovery rate, etc., even at the first exercise, give valuable indication as to the power of the patient to perform work. A consideration of this enabled one to map out a routine of graduated exercise and rest, and vocational training suitable to the patient's powers.

In the case of many of the patients, particularly those classified D. A. H., there was a strong psychoneurotic element. It was a distinct advantage in these cases to be able to demonstrate to the patients their capacity for work, and their improvement, in terms of foot pounds.

It is a satisfactory method, and gives good results so far as estimation of the efficiency and progress of the patient are concerned. It is not necessary to analyze the particular form of the graphs obtained, and the method is as free from theoretical objection as any blood pressure method of estimating myocardial efficiency can be.

But an analysis of the form taken by the graphs is not by any means an unprofitable proceeding, and constitutes a second method of using the progressive exercise test.

Study of the accumulated data did not at first reveal any constant signs of myocardial deficiency, but on the contrary many cases, with comparatively early exhaustion, seemed to run a course not markedly departing from the normal.

However, it was remarked that patients with deficient work capacity when exercised to exhaustion gave curves of two distinct types. In the first, the point of exhaustion was marked by a definite fall in pulse rate, blood pressure remaining unaffected or falling only slightly, in proportion to pulse rate. In some cases the exercise was stopped owing to complaint of distress before either pulse or blood pressure fall were sufficiently great for differentiation. One or two more exercise units would probably have brought these cases under the same classification.

Further examination showed that all cases finally classified D. A. H., that is, cases conforming to Lewis's effort syndrome (17) were included in the first class.

All patients referring their symptoms to shell gas poisoning gave a similar reaction, and patients "run down" after septic or infective processes. Cases of functional nervous disease appear in this group.

The second group, with disproportionate fall in systolic and pulse pressure, included patients whose symptoms suggested actual organic changes in the cardiovascular system. Many are recorded to have had definite cardial enlargement (determined by palpation and x ray) traceable to a myocarditis following or accompanying an acute infection or to chronic renal or arterial disease. All cases diagnosed arteriosclerosis, most of them early cases, fell into this group.

Cases of valvular disease (mitral stenosis and mitral regurgitation) did not give results sufficiently definite to classify them. But it is now well recognized that an impaired valve does not necessarily indicate an impaired myocardium (18). It has also been pointed out that in cases of mitral stenosis the patients may suffer from D. A. H. that is concurrent with, rather than consequent on, their valvular defect (19, 20).

It is easier to observe these results than to account for them. An assertion has been made that D. A. H. is best described as a vagal exhaustion, vagasthenia (21). The tachycardia present in many of these cases is attributed to an alteration in the equilibrium between vagal and sympathetic factors in the direction of giving excess action to the sympathetic system.

A consideration of the various graphs will show that the value of the initial pulse rate bears little, if any, relation to the pulse rate changes during exercise. The highest pulse rate obtained was in a case where the pulse was uncountable and above 180. The exercise continued, and the rate fell suddenly to 144 beats a minute. There was no corresponding variation in the blood pressure readings.

The onset of exhaustion, in the first group of cases, accompanied by very real distress—giddiness, staggering, complaint of precordial pain—and a falling pulse, points to a condition of exhaustion of the sympathetic system. Two possibilities suggest themselves, a rapid exhaustion of the sympathetic apparatus, underproduction or overproduction of some undetermined internal secretion bringing about the distress, or the distress may be due to defect in the conducting mechanism of the heart (cf. Stokes-Adams syndrome). Actual heart block is not suggested as the pulse rate falls gradually, and the pulse is not intermittent.

The fact that blood pressures are maintained at the point of distress may be due to an attempt by vasoconstriction to overcome the cardiac distress. In spite of the pressure readings the pulse on palpation gave the impression of weakness. Notice that diastolic pressure rises.

The work already done leaves one but on the threshold of the subject. This much seems clear, that D. A. H. is a systemic rather than a local condition, and that one should commend attempts to devise a diagnosis which would not focus the attention of the patient (and his medical adviser), on the heart (22).

However, this paper is not directly concerned with the wide subject of D. A. H., but with the more limited one of blood pressure changes.

The behavior of the second group of cases is not difficult to understand. In the presence of definite myocardial damage it is only natural to expect to find on exhaustion a rise in pulse rate with a fall in the force of the heart beat.

These are the cases to which Goodall refers in his paper (23) as showing on exhaustion a fall in blood pressure interpreted as the point at which the heart is just beginning to dilate.

Some ten per cent. of all patients exercised showed a pulse pressure remaining throughout the exercise at a lower level than did the diastolic pressure. These were all cases of poor staying power, but all cases classified "poor" did not show this feature. Few of the cases which did show it were in the D. A. H. group. At present no generalization is possible with regard to this sign.

Nicholson (24) has pointed out that in hysteria the blood pressure readily becomes high owing to nervous stimulation of the vasomotor centre. The highest blood pressure readings in the series of cases examined were found in a case of functional nervous disease.

The usefulness of Type B exercise is not yet fully worked out. It is a standard test, and therefore results from it can more easily be compared. It takes less than twenty minutes and is therefore more convenient than a test of indefinite length. It is hoped that a study of the form of the graphs obtained may give a basis for the estimation of efficiency. The extra spurt which ends the exercise should reveal the power of the heart to respond to a call for extra work.

Investigations along these lines is proceeding, but it would appear from material already collected, that the extra spurt should be made more severe.

Remark has already been made of the psychotherapeutic value of exercise tolerance tests, but one wondered sometimes if they had any curative value also. The sense of well being that comes to a fit athlete an hour or two after a hard football match is common experience. Occasionally patients said they had this same feeling after being fully exercised and were quite certain later that a definite and lasting improvement in their condition had taken place.

This improvement was real and borne out by their increasing activity and keenness. Constant observation of these cases failed to disclose a psychoneurotic factor and in all of the cases the particular test to which value was ascribed revealed a definite lack of cardiac reserve.

Unfortunately the number of such cases was extremely small (only two or three out of some sixty or more examinations).

CONCLUSION

It only remains to add a few words in conclusion. I am well aware of the many defects in this paper. There yet remain many experiments that should be done, and before a detailed analysis of the types of graphs obtained can be undertaken much greater study of the underlying principles must be carried out.

This paper does not pretend to be more than a preliminary communication upon certain methods of tabulating blood pressure and pulse rate changes in normal and diseased subjects during exercise. The experimental work has been fitted into half hours snatched from a busy day, and in many cases a close consideration of readings was not possible until after the particular subject had passed out of reach into civilian life and the opportunity for confirming or extending the observations was gone.

Nevertheless what work has been done has been carried out with all care and the generalizations arrived at so far appear to rest on solid foundation. These may be summarized as follows:

SUMMARY

1. There is a fall in diastolic pressure in normal subjects during exercise, and a rise at the conclusion of exercise.

The postural factor in my observations has already been discussed. Of course all readings should be taken standing, but certain manipulative difficulties have so far prevented this being done satisfactorily.

2. Cases presenting the effort syndrome without objective signs of cardiac disease show on exhaustion a falling pulse rate while maintaining blood pressure levels. Exhaustion of the sympathetic nervous system is suggested by me as a possible cause of this phenomenon.

3. Patients presenting cardiac enlargement, arteriosclerosis, or other condition of unhealthy myocardium show on exhaustion a fall in systolic and pulse pressure with a pulse rate persistently rapid, or increasing. Exhaustion of the myocardium will explain these occurrences.

One is only just on the threshold of new territory and it is my intention to follow up the work already done. It still remains to be determined whether normal subjects, exercised to absolute exhaustion, would not show the same reaction; that is, do effort syndrome cases show a specific reaction to fatigue or merely a premature onset of the normal reaction?

I believe that they will be shown to give a specific reaction. The effort syndrome is a clinical entity in civilian practice and it seems worth while to investigate the matter further. The indications at present would justify a tentative description as a certain plus action (sympatheticotonia) of the sympathetic system or of certain of the substances activating, or activated by that system. On exercise there develops fairly rapidly a condition of sympathetic asthenia a weakened action of the sympathetic nervous system, due, shall we suggest to an alteration in composition, or in degree, of substances activating that system.

For the present this must remain pure theory and outside the scope of these investigations. It is enough to have demonstrated the value of the method and the promise of future knowledge which it holds out.

The author's references will appear in his reprints.

Hypertrophy of the Heart*

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It has been generally believed that hypertrophy of the heart muscle is a direct effect of increased work on the heart. In accordance with this belief the handicap of the various lesions, such as damage to the valves, was said to be compensated for by an increase in the size and power of the cardiac muscle; the conception of compensation was based on this belief. When, in spite of an increase in size of the heart muscle there were symptoms of an impaired circulation the expression "broken compensation" was applied. Physical work, when heavy and repeated, has been held to cause myocardial hypertrophy; the socalled athlete's heart was said to owe its origin to this result of physical exertion. Hypertrophy of the myocardium is a common finding at necropsy in cases of heart disease. Hypertrophy of the cardiac muscle has been considered an important departure from the normal, and clinicians have devoted much effort to its detection in the living patient.

Of late, however, doubt has been thrown upon the existence of the athlete's heart. Also many cardiologists have largely abandoned the theory of back pressure and purely mechanical conception of cardiac insufficiency; the latter is being attributed more and more to an active infection. It is being realized today that the exact reason for the development of hypertrophy of the myocardium is uncertain. In spite of the large amount of work, experimental and otherwise, that has been done on the problem of cardiac hypertrophy it is felt to be difficult to interpret the significance of the results.

This, then, is a statement of the present situation as regards the subject of hypertrophy of the heart muscle. It would seem that the matter may be considered reopened for discussion.

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Hypertrophy of the heart muscle may be defined as a growth of the muscle beyond that which is normal for the age, sex, stature, and other conditions of the patient in whom the heart is placed. The condition presents itself in the form of either a deposition of perfectly new cells or an increase in the volume of those already present, probably mostly the latter.

Evidence has been accumulating that if the heart is fully normal it does not undergo hypertrophy as a result of athletics, even if the latter are practised over a considerable period. For example, it was found that the hearts of oarsmen (1) and of marathon runners (2) were not enlarged. The same was true of some six day bicycle riders (3), their hearts were observed to be extraordinarily quiet. The pulse rate, even when the riders had just come off the track, was not higher than 80 and most of them were in the sixties. The heart sounds were faint, but the pulses were strong.

It is well known that hypertrophy of the heart muscle is found in hearts that are affected by disease, if the latter has been present long enough to permit a hypertrophic change in the muscle. In considering the reason why this occurs one readily thinks of an increase in the blood supply and therefore of the nourishing of the myocardium. The main blood supply of the heart walls is that delivered by the coronary arteries, and the physiologists have shown that the coronary stream is directly dependent upon the pressure obtaining in the first part of the aorta from whence the coronaries have their origin. In accordance with this, in hypertensive states one commonly finds hypertrophy of the heart muscle, but on the other hand the myocardium may be hypertrophied in conditions in which an increase in the blood pressure does not occur. The problem is not, then, so

simple; let us turn for a moment to the matter of the hypertrophy of other muscles in the body.

In general it is known that the normal growth of the muscles, as well as of other tissues, is directly influenced by the age, health, and diet of the individual. Growth is a normal phenomenon in the young and gradually ceases as the period of adult life is reached. Also, there is abundant evidence that growth is much influenced by a favorable diet; a generous supply of foods of high calcium and vitamine content is important.

But with these factors of normal growth we are less concerned; the problem of this paper is that of muscular hypertrophy, which perhaps may be defined as growth beyond that normally achieved. It is a common observation that muscles hypertrophy when subjected to excessive use. Burton-Opitz states that when exercised, the skeletal muscle acquires new cells as does the uterus after its reception of the fertilized ovum. The same physiologist (4) writes: "It must be evident, therefore, that the metabolism of a muscle is absolutely dependent upon its connection with the central nervous system. For this reason, it is commonly held that the ganglion cells exert a trophic influence upon the muscle, which, however, is brought to bear upon it through its ordinary motor nerve and not through special trophic fibres. Hence, any motor nerve may be said to possess trophic qualities because it keeps the muscle in activity, thereby favoring its metabolic processes. The blood supply is, of course, of some importance, because a copious flushing out of the muscle retards the process of degeneration, while a scanty blood supply favors the occurrence of these changes."

What happens if a muscle is deprived of its nerve stimuli, as happened in many of the wounded in the recent World War? J. B. Stewart and A. Evans (5), in discussing what takes place in muscles whose nerve supply has been cut off by gunshot wounds, state, ". . . actual pathological changes take place in a paralyzed muscle. The degenerated muscle fibres become infiltrated with connective tissue cells, fibrous tissue and fat, and become converted into a fibrofatty mass, so that now, instead of contractile muscle fibres, we have more or less of this inert, non-contractile substance." It seems needless to give further references or authority for the assertion that the growth of skeletal muscles is dependent upon impulses received from the nerves.

It is suggested that hypertrophy of the heart muscle is due to stimuli from its nerve supply, probably mostly those from the sympathetic system which are augmentative in effect.

The primary purpose of the heart may be said to be that of propelling a sufficient amount of blood to the place where the latter is used, namely, the capillary field. Whenever there is not enough blood flow in the capillaries to meet the tissue needs certain automatic adjustments take place. Constriction of some vessels and dilatation of others may shunt the blood to the regions in which it is particularly needed and permit a freer flow, respectively, while certain reflex nerve stimuli may cause the heart to increase its rate or force of contraction. If this stream of reflex nerve stimulation proves frequent hypertrophy of the heart muscle results.

On this Burton Opitz (6) writes: "Hypertrophy finds its origin in the fact that the cardiac cells are in a tonic condition and react to excessive stimulation by increasing their power of contraction. This change eventually produces a compensatory increase in size and massiveness of the heart."

Some have thought that the size of the capillaries was dependent almost entirely upon local metabolites. Thus, Dale and Richards (7) have shown that histamine will cause a dilatation of the capillaries even after the nerves to these vessels have been severed. But Bayliss (8), in discussing the subject of vasodilatation, writes, ". . . although metabolites are a partial cause, there is a nervous effect in addition, since the degree of dilatation is not in proportion to the increase of oxygen consumption." And further one finds, "The effect of products of metabolism of active organs is to cause dilatation of the bloodvessels, thus ensuring an automatic regulation of blood supply. But the facts do not account for the whole of the vasodilator phenomenon met with, which require the existence of vasodilator or inhibitory nerves (9)." Although the problem is complex I believe that study of the literature of physiology warrants the assumption that when conditions in the peripheral field of the circulation are not right there are reflex stimuli to the cardioaccelerator centre in the medulla and thence to the heart, causing the latter to increase its rate or force of stroke.

The heart normally is constantly working with, of course, short intermissions of rest, i. e., diastolic periods, and yet it does not hypertrophy. The normal heart, as is well known, has so much power in excess of ordinary needs and the cooperation of the vascular elements is so perfect that there is little need for excess reflex stimulation of the heart. In persons trained to athletic pursuits the automatic dilatation of the peripheral vessels works so efficiently that here again the needs of the faster circulation may be met without much extra stimulation of the heart.

In disease the impairment of the heart itself or of the vessels in the periphery is such that the circulation in the capillaries may easily not be adequate in quantity or in quality of blood. In either case it is conceivable that a continuous stream of impulses of augmentative type and mostly through the sympathetic system may be at work upon the heart. The myocardium may then hypertrophy and the heart may or may not be able to maintain an adequate circulation.

Hypertrophy, then, may still be looked upon as evidence of abnormality, as it occurs only in response to a stream of stimuli which normally do not exist, as under normal conditions the automatic adaptations of the circulatory apparatus take care of all needs.

A little thought will show that this conception of the working of the circulation supports the abandonment of the back pressure theory as an explanation of cardiac insufficiency. For example, in hypertensive states the myocardium hypertrophies and sooner or later the heart may show evidence of inability to cope with the situation, but it must not be considered that the peripheral resistance, which is increased in hypertensive conditions, of itself caused the heightened blood pressure and subsequent myocardial hypertrophy. The increased level of the

blood pressure is, of course, due to the energy produced by the muscular contractions of the heart, and, according to the theory advocated in this paper, the hypertrophy of the heart muscle is the result of the stream of reflex nerve stimuli for augmented contractions.

The reader is warned that it is not asserted, in this paper, that nerve reflexes are the sole means by which the circulation is regulated. The effect of nerve stimuli of reflex origin is, may I repeat, believed to be the primary cause of myocardial hypertrophy.

SUMMARY AND CONCLUSIONS

Hypertrophy of the heart muscle has long been considered as satisfactorily explained by the assumption that it was due to increased work of the heart, but since evidence has accumulated that the normal heart does not hypertrophy even in trained athletes, while hypertrophic changes are commonly present in heart disease with or without increased blood pressure, it would seem that the subject is reopened for discussion.

Consideration of the physiology pertaining to the growth of skeletal muscle discloses that the latter is absolutely dependent upon the connection of the muscle with the central nervous system. Trophic influences are supplied through the motor nerves; the blood supply is of secondary importance.

It is suggested that hypertrophy of the heart muscle is due to stimuli from its nerve supply, probably mostly from the sympathetic which is augmentative in type.

The primary purpose of the heart may be said to be that of propelling a sufficient amount of blood to the place where the blood is utilized, namely to the capillary field in the periphery.

When the blood supply in the capillaries is not sufficient for the needs of the tissues certain adjustments of the circulation take place. Some of these are local in their action and in addition there are reflex nerve mechanisms back to the heart.

It is these reflex nerve stimuli to the heart which, if sufficiently repeated, are suggested as the essential cause of hypertrophy of the heart musculature.

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The Classification of Murmurs with Special Reference to Extracardiac Murmurs

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Heart murmurs may be classified into three groups: the intracardiac, the cardiac, and the extracardiac. This division is based upon their source of origin and formation. Since murmurs are the predominant signs of heart disease, their proper grouping will serve to a clearer understanding of cardiopathology and cardiotherapy.

The intracardiac group of murmurs are the result of disease of the inner part of the heart, involving the endocardium, the valves, and their associated structures. They are caused by some interference with the normal passage of the blood from chamber to chamber or from chamber to the pulmonary or systemic outlet. This interference with the proper circulation may be due either to an obstructive or to an imperfectly guarded valvular mechanism. As a result of these intracardiac changes there are formed a variety of murmurs depending upon the location of the valvular defect, the nature of the deformity, the period during the cardiac cycle, the propagation of the abnormal sound and the cardiac strength. The intracardiac murmurs are the most common and form the largest group. They all have certain general characteristic features which identify them as intracardiac murmurs. They always take their origin from a valvular area and have a definite route of transmission, with a gradual increase or decrease in intensity. They coincide with either phase of the cardiac sound, blending with it or obliterating it, and add their own musical quality and strength.

To the cardiac group of murmurs belong all those which are caused by structural abnormalities, pathological changes, or physiological disorders of the myocardium. Structural cardiac abnormalities are mainly congenital and give rise to the congenital murmurs. These murmurs are diagnosed by their presence in early life, their localization to the base of the heart, their bizzare character, and in many cases, by the associated cyanosis, clubbing of the fingers and policythemia.

Pathological changes of the myocardium, whether inflammatory or degenerative, give rise to murmurs. These murmurs are caused by an imperfect closure of some valve or by an uneven roughened outlet, associated with a weakened or sclerosed myocardial

wall. They are usually heard at the mitral or aortic region, and have a limited area of transmission. They appear distant, of even intensity, and lack in vigor and musical quality. Arrhythmia is occasionally present.

Physiological cardiac disorders frequently cause murmurs. These murmurs are not the result of disease of the myocardium but of some dysfunction of the physiological properties that control the heart. The five primary physiological functions which govern the heart are known as stimulus production, excitability, conductivity, contractility, and tonicity. It is a lack of proper tonicity which causes a murmuring of the heart. Cardiac hypotonia may be of congenital origin or caused by malnutrition, anemia, cardiac fatigue, hypoadrenia, improper nerve control, or febrile diseases. Congenital cardiac hypotonia may be due to a congenital shortening of the cardiac muscle fibres. In any given heart the greater the length of the muscle, the stronger its contraction. According to Starling (1), "Tone is proportionate to the energy per unit length of muscle contracted." An atonic relaxed heart, whether congenital or acquired, will be unduly stretched by the sudden intraventricular impact during systole and give rise to a weak contraction with an abnormal vibratory movement and a soft systolic murmur.

It is this murmur which, because its origin was imperfectly understood, has received a variety of names of which, inorganic, hemic, accidental and functional are commonly known. Since, however, the cause of this murmur can be traced to a functionally deficient cardiac tonicity, it is a true cardiac murmur. The condition may therefore be called myatonia cordis, and the murmur itself myatonic murmur. As I have stated (2), the diagnosis of this myatonic cardiac murmur rests on the fact that it frequently changes in quality and strength, appearing and disappearing with the underlying etiological factor. It is usually heard in the mitral or pulmonic region as a circumscribed soft blowing systolic sound with no evidence of heart disease and no background of a heart damaging illness.

In the extracardiac group of murmurs may be included all adventitious sounds which are produced by the pericardium in its relation to the heart, the pleuræ, the mediastinum and the pericardiosternal ligaments. The pericardium may be primarily affected as in the various forms of pericarditis or it may become diseased by extension from contiguous organs. The extracardiac murmurs are of special interest and importance as they may be present without any heart lesion or disturbed circulation. They are occasionally difficult of diagnostic interpretation because they may simulate murmurs of the intracardiac or cardiac group.

The extracardiac murmurs may be divided into pericardiocardiac, pericardiopleural, pericardiomediastinal and pericardiosternal. The pericardiocardiac murmurs or frictions are usually heard best at the base of the heart, sometimes at the left sternal border or apex, as a superficial, scraping double sound of even intensity. They keep pace with systole and diastole but are not exactly synchronous with them. The pericardiopleural sounds are the result of adhesions between the pleura and the pericardium and are heard best along the apex or left sternal region. They have a blowing quality or an irregular friction sound, uninfluenced by the cardiac cycle but affected by the respiratory movements. The pericardiomediastinal murmurs are too indefinite and uncertain to be of diagnostic value. The condition may be diagnosed by the associated symptoms and signs of mediastinitis.

The pericardiosternal murmurs are of considerable diagnostic value but have received little or no attention. The pericardium is held in place, above by its fibrous layer spreading along the great vessels, below by its attachment to the diaphragm, and in front by the superior and inferior sternopericardial ligaments. The upper one is attached to the inner surface of the manubrium sterni and the lower one to the inner surface of the xyphoid process. It is evident that in any case of adhesive pericarditis there will be an undue pulling and twisting of the pericardiosternal ligaments, thereby causing a pulling or tugging of the sternum and a vibratory murmur, specially at the yielding lower portion. A thorough examination should be made of the sternum in all cases of pericarditis, past or present, especially in children whose thorax is thin and elastic. In some cases there will be readily seen a retraction of the xiphoid process with each systole and on careful auscultation will be heard a tugging, twisting or friction murmur at the lower sternal portion. This pericardiosternal murmur may be considered as an early sign of adhesive pericarditis.

SUMMARY

The numerous scattered murmurs may be grouped into intracardiac, cardiac and extracardiac. The murmurs of each group indicate at once their source of origin, the part of the heart affected, the nature of the physical disturbance in the mass of the circulating blood, the anatomical and physiological pathology. Intracardiac murmurs have as their etiology a systemic infection, rheumatic or other bacterial. They always start at some valvular area, spread along a definite route with an uneven intensity, and musical quality. Cardiac murmurs are the result of some embryological error, physiological abnormality, focal infection or toxemia. The murmurs are of diverse kinds, congenital, myatonic or myocardial. Extracardiac murmurs may be pericardial, pleuropericardial or sternopericardial. The condition is usually due to a general infection which affects the pericardium, or to an extension from a diseased neighboring organ. The pericardial murmurs are double friction sounds heard with systole and diastole. The pleuropericardial murmurs are usually heard at the left sternal region, with inflation or deflation of the lungs. In all cases of pericardial disease the sternum should be carefully examined. If the xiphoid process is observed, a tugging may be seen or felt during cardiac systole, due to a pulling on the pericardiosternal ligament. The same condition will produce a vibratory sound or murmur at the lower sternal portion. This systolic tug and friction murmur is of considerable interest as it may be a sign of adhesive pericarditis.

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Practical Therapeutics

THE TREATMENT OF HAY FEVER

A Study of 114 Cases

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The 114 cases of hay fever chosen for this study were treated in 1924. The patients were all residents of New York city and its suburbs. Since a complete detailed survey of this district with special reference to plants causing hay fever has never been made, the aid of a botanist was secured to determine which of the plants growing in the neighborhood could be regarded as the most important causes of this disease. Although the results of this investigation are not as complete as a detailed survey would be, they serve as a practical basis for the treatment of the patients herein discussed. The plants and trees have been classified according to their seasons of pollination.

SPRING SEASON

Red oak	White birch
White oak	Paper birch
Pin oak	Kingnut hickory
Chestnut oak	Pignut hickory
Maple	White elm

SUMMER SEASON

Timothy	Sweet vernal
Orchard grass	Red top
June grass	Blue grass

AUTUMN SEASON

Low ragweed	Giant ragweed
	Cocklebur

In this classification the plants, the pollen of which are all wind borne, are arranged in their order of importance as etiological factors in hay fever. The spring season begins about the first of April and ends about the middle of May—red oak being the most common cause of the disease during this period. The summer season begins in the middle of June and ends in the latter part of July. In this season most of the patients are sensitive to timothy. The fall season commences on August 15th and continues until the first frost, and practically all patients suffering from this type of hay fever react to both short and tall ragweed. Most of the cases studied showed multiple sensitivity and reacted to all the other pollens listed here, in various combinations. Reactions were also noted to pollens of plants which pollinate through irregular periods and could not be included in any of the three seasons. These may act as contributory causes of hay fever. The most important of these are: Plantain, from May to August; lambs quarter, from June to October; rye, during May and June; Russian thistle, from July to September.

Of the 114 patients, ninety-one suffered from late hay fever; nine from summer hay fever, while there was only one patient suffering from the spring variety alone. In addition to this, there were four whose symptoms appeared through all three seasons and nine through the last two seasons.

SYMPTOMATOLOGY

The symptoms of hay fever are prolonged sneezing spells accompanied by itching in the nose, eyes, throat, and occasionally the middle ear. The sneezing spells and the swelling of the nasal mucous membrane, by causing a serious obstruction to inspiration, result in a dryness of the mouth and throat due to continual mouth breathing. There is also a continuous discharge from the nose, which may become mucopurulent if the hay fever is complicated by a bacterial infection.

Not all patients, sensitive to pollens, present these symptoms, as there are a few who suffer from pollen asthma alone. However, this is a rather infrequent condition and only one such case was treated in this series. It is common to find cases in which the individuals suffer from hay fever and seasonal asthma simultaneously. Twenty-two such cases are included in this group here. Although both are caused by the pollen, the hay fever always precedes the asthma in its onset.

Patients sensitive to pollen often show sensitivity to other foreign proteins. In this series, in addition to hay fever, twenty-seven patients showed allergic manifestations due to foreign protein other than pollen. Of these, seventeen suffered from asthma, seven from urticaria and three from perennial hay fever.

POLLEN EXTRACTS

Before extraction, the weeds which were collected for this purpose, were stripped of their leaves and placed in pans of water. The stems were so weighted in the centre of the pan as to allow the heads to hang over the sides and shed their pollen on glazed paper. The water was changed daily and pollen was shed by the weeds for three or four days. The pollen, collected in this manner, was then sifted through a 200 mesh sieve to separate it from other parts of the plant that may have fallen with it.

The pollen extracts, used in testing and treating these patients, were prepared according to the method devised by Coca. The superiority of extracts prepared in this way has been amply demonstrated by Vander Veer (1). They are especially useful in ophthalmic reactions where extracts made by other methods have proved to be quite inefficient.

TESTS

Both ophthalmic and skin test were used in all cases, the intradermal method being used exclusively for the latter. The advantages of this method over the cutaneous has been demonstrated by Mullin (2), and by Brown (3) in several experiments. It is more positive than the scratch method. It is not dangerous from the point of view of constitutional reactions, only five of about fifteen hundred tests given in this series (a little more than one third of one per cent.) produced moderate attacks of hay fever. I have found the intradermal method to be generally more convenient and more satisfactory than the scratch method.

In testing a patient intradermally, about one or two one hundredths of a c.c. of the extract are in-

jected. If the subject is sensitive, a reaction will appear in about five to fifteen minutes. A positive reaction usually takes the form of an urticarial wheel, frequently with one or more pseudopods extending from the wheel surrounded by an area of erythema. The extract used in the first tests had a nitrogenous content of .0001 mg. nitrogen to the cubic centimeter. If the patient gave a slight or a moderate reaction to this test, further tests of stronger solutions were given until a marked positive reaction was obtained. The degree of the patient's sensitivity was determined by the size of the wheel, the area of erythema surrounding it, and the nitrogenous strength of the extract which was found necessary to obtain a marked reaction.

The ophthalmic test was performed in the usual manner, consisting of the application of one or two drops of the pollen extract, by means of a tuberculin syringe, to the conjunctiva of one eye, the other eye being used as a control. The solutions were the same as those used for the skin tests. A positive ophthalmic reaction is recognized by injection and edema in the conjunctiva. This reaction can quickly be dispelled by the application of a few drops of adrenalin. This test was not as uniform in results as the skin test, for some patients who were clinically known to be sensitive to certain pollens and reacted positively to the intradermal test, failed to show any sensitivity when given the ophthalmic test. However, to one experienced in pollen therapy, the conjunctival reaction can be very valuable as an additional indication of the degree of the subject's sensitivity.

TREATMENT

The old fashioned manner of treating all hay fever cases alike is being discarded. The notion that desensitization can be accomplished by giving a set number of injections at definite intervals is now antiquated. With the present day knowledge of this subject and the experience gained in recent years, a marked change has taken place in the treatment of this condition. Now each patient is studied individually and receives the treatment necessary for his case. This undoubtedly accounts for the generally better results obtained by men engaged in pollen therapy today.

The preseasonal treatment is obviously the most desirable, but often a neglectful patient will present himself for treatment after the onset of the season. Such cases were treated in a somewhat different manner which is discussed below under seasonal treatment.

PRESEASONAL TREATMENT

In cases where the patient presented himself early for treatment, i. e., about two months before the onset of the season, injections were given at least twice a week until the onset of the season and then about once a week, right through the season. However, this was not strictly adhered to, as it has been my experience that the greater number of injections with smaller increases in dose, and shorter time intervals, give the best results. The proper interval between injections was determined by the local reactions following them. If the reactions became unduly severe, the doses were reduced and the frequency of the injections was diminished. It is always best, though, to give as many injections as possible in the shortest possible time. This conclusion was reached in the summer of 1923, when a few patients received intensive treatment with excellent results. These patients presented themselves for treatment about a week or two before the beginning of the hay fever season. Under the circumstances it was impossible to give them more than a few injections before the onset, except at very short intervals. Therefore, they were given daily injections until the season began, when the intervals were lengthened to two days, then to five days. Treatment was continued right through the season. In the series discussed here, twelve cases were treated in this manner, and we found that there was a greater percentage of relief among them than those who had received injections over a longer period of time before the season. This is in agreement with observations made by Duke (6).

Treatment by local application was also used. This method, as an additional means of desensitization, has been recommended by Caulfield (4), MacKenzie (5), Duke (6), and others. An extract containing .0001 mg. of nitrogen to the cubic centimetre was sprayed by means of an atomizer into the nose. This nasal spray would induce violent sneezing spells in some cases, but these were generally of short duration and were relieved by an application of adrenalin chloride. We found that the results obtained by local applications in conjunction with injections amply justified its use.

The pollens chosen for desensitization were those to which the patient specifically reacted. This is a better course to follow than the use in all cases of either the most offending pollen of a group or a mixture of the most offending pollens of a group. This is in accord with observations made by Piness (7).

There was no set rule or set series of doses for all patients. One patient may have been given .00001 mg. of nitrogen as the first injection, while another may have received a .001 mg. of nitrogen, depending on the degree of his sensitivity. The increase in the doses was governed by the local reactions. If none appeared, the nitrogenous content of the injections was increased steadily in order to bring about quick desensitization. However, if a reaction did appear, the same dose was repeated at the next injection or was reduced, depending on the severity of the reaction. There was no definite quantity of nitrogen necessary to bring about desensitization. In some cases it was necessary to inject as much as 0.2 mg. of nitrogen, while in others it was found impossible to give more than .05 mg. of nitrogen because of the severe reactions produced.

SEASONAL TREATMENT

As has been said above, patients, even though they received preseasonal treatment, continued to receive injections right through the season. Local treatment, however, was discontinued at this time, as it caused great discomfort to the patients. In addition to this type of seasonal treatment, there was still another, that given to patients who presented themselves for treatment after the onset of their symptoms. Great caution was exercised in the treatment of these cases. Tests were made at first with a .00001 dilution and if no reactions were obtained, .0001 to .001 dilutions were used. The eye test, since it proved very annoy-

ing to the patient, was omitted during the season. Treatment was given daily until the symptoms were relieved, when the interval between injections was lengthened to two or three days. As in preseasonal treatment, the nitrogenous content of injections was dependent on the degree of the patient's sensitivity and the reactions as they occurred. Sixteen patients received seasonal treatment in this series.

CONSTITUTIONAL REACTIONS

In the treatment of this series of cases, several constitutional reactions occurred. In spite of cautious handling, such reactions will occur. They are unavoidable, no way being known to prevent them as yet. In the group of cases studied here, there were twelve reactions in all, six taking the form of hay fever, three hay fever and asthma, one hay fever, asthma and abdominal crises, one urticaria, and one conjunctivitis. These reactions occurred shortly after the injection and were relieved with adrenalin chloride. Local reactions, taking the form of an edema or urticaria, were much more common, in some cases occurring a few hours after the injection, but they soon disappeared with slight if any discomfort to the patient. A rather unusual sort of reaction was noted in five cases. A few hours after the patient was injected, urticaria was noticed at the site of the last previous injection, although no reaction occurred when the previous injection was given.

Patients were always kept in the office for at least half an hour after injections so that those who showed any symptoms of reactions, were immediately treated. From the results obtained in this series, it would seem that the patients who suffered from either constitutional or local reactions, were the ones who obtained the most benefit from the treatment.

RESULTS

Of the 114 patients treated, 41 or 35.9 per cent. were completely relieved of their symptoms; 46 or 40.4 per cent. received marked relief; 15 or 13.1 per cent. received about 50 per cent. relief, and 12 or 10.5 per cent. received slight or no relief whatsoever. In the group of twelve who received the intensive treatment described above, 5 or 41.7 per cent. were completely relieved; 5 or 41.7 per cent. received marked relief; one received about 50 per cent. relief, and one was only slightly relieved. Of the 16 who were treated after the onset of the season, 7 or 43.8 per cent. were either completely relieved or obtained marked relief; 6 or 37.5 per cent. received about 50 per cent. relief, and 3 or 18.7 per cent. received no relief.

CONCLUSIONS

1. In order to obtain the best results in the treatment of hay fever, a survey should be made of the flora in the local district.

2. The intradermal method of testing gives greater certainty as to results than the cutaneous method and is not more dangerous as to constitutional reactions.

3. The intensive, preseasonal method of treatment gives the best results.

4. Patients who neglect to obtain prophylactic treatment can still be relieved after the onset of their symptoms.

5. Constitutional reactions are often unavoidable and means should always be at hand to relieve them. Furthermore, it seems that those patients who have either local or constitutional reactions, obtain the most relief from the treatment.

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Therapeutic Effects of Ultraviolet Radiations.—C. Lee Pattison (*Lancet*, October 18, 1924) asserts that not all the benefits obtained from heliotherapy are due to the effect of light. Some of these effects are due to the increased metabolism resulting from the associated exposure of the naked body to cool air. The rays of light emitted by various apparatus giving artificial light are shorter than the rays from the sun and may have quite a different physiological effect than the rays of the sun.

There are two ways in which the ultraviolet radiations may act beneficially: 1, by increasing the bactericidal power of the blood, and 2, by activating the vitamines in the body.

Any insult to the skin, whether produced by ultraviolet and invisible rays, or by dark heat, or by blistering agents, appears to provoke or increase the defensive power of the body. Probably the results are brought about in two different ways: 1, by the warming of the blood, due to the absorption of dark heat and the visible rays; 2, by the absorption of the products of tissue damage acting as a stimulant to immunizing mechanisms.

It has been shown that ultraviolet light activates the fat soluble A vitamine already stored in the body, although it has no power of synthesizing it, so in that respect (in calcification and growth) ultraviolet radiation applied without giving vitamine A in sufficient quantity would have no beneficial effect.

Pattison believes that the commonly accepted assertion that the degree of pigmentation is an indication of the resistance of the body to disease is wrong. It is well recognized that the complexion of the patient influences the amount of pigmentation; blondes pigment with difficulty and persons with red hair less easily still. Apart from these primary differences, there are at least three distinct types of pigmentation, which may occur irrespective of the complexion of the patient. 1, The dark reddish brown color, later almost chocolate brown, which follows exposure to the sun's rays and to radiations from the carbon lamp; 2, a slatey gray color which follows prolonged exposure to the quartz mercury vapor lamp; 3, various shades of yellow, somewhat like the color of cachectic patients. This form of pigmentation may follow the use of any source of ultraviolet light, and chiefly in patients who are not making satisfactory progress. Patients show individual variations in their pigmentation reactions to the various sources of radiations, and, apart from the yellow type mentioned above, the degree and type of pigmentation are no indication of the response to treatment.

Historical Medicine

A Parallel in Civilizations

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It is curious to note how close to the thought of the modern world the thought of Plato's world is. Of course to some degree it is explicable on the theory he it was transmitted so largely that of ancient Greece to us. Yet it is not always apparent at first glance, but as one becomes aware of the implications of any special phase of it we get an insight into their parallelism. It is perceived the mental pabulum, that upon which thought feeds, the phenomena in their essence which surround us, differs but little. The process of the digestion, the sequence and the relativity of the thought, differ very much and this is what at first distracts us. But the resulting wisdom in a broad synthesis is the same. Some of its implications involve problems of medical interest and these of course I have chosen to set forth in these essays, but it is often necessary to allude to other matters in the way of emphasis and illustration. Many of the dialogues, which at one time or another, by one or another critic, have been attributed to Plato are rejected by more discriminating Platonists as spurious—many apparently being theses set in imitation of the master. Such a one is the Cleitophon in which it is insisted with great emphasis that men should have a concern not only for the way they make their money but for the way in which they disburse their wealth and for the proper bringing up of those who are to inherit it. It is the conception, become so familiar and a little irritating, which modern men of wealth declare they entertain as the trustees of the people.

Memorial to Andrea Vacca Berlinghieri by B. Thorwaldsen

After this, which to us has already become a tiresome platitude and a nauseous hypocrisy in the mouths of many, we would expect a more noble tribute to our art than the author's definition of medicine as "like all other trades, a mere common agreement as to what is useful and profitable to do." We protest that is not what it was even in the time of Hippocrates. The Hippocratic *Oath* is full of the promise of self control and attention to duty. Socrates was ever teaching the same. Sophrosyne is in the way of becoming one of our own watchwords as the heirs of Greece. We are continually going to extremes and ever returning to means, *ni quid nimis;* the first term is one of experiment and the latter of doubt. In the *Dissoi Logoi,* as I have it from Dupréel, notes supposed to have been taken from the lectures of sophists before the time of Plato, we get the same order of thought. The *Oath* of Hippocrates is the highest expression of the morality of the Socratic philosophy: "Into whatever houses I enter I will go for the benefit of the sick and I will abstain from every voluntary act of mischief and corruption." There was the abode of the women and it was hedged by the jealousy of the harem. Behind the oath lay the public demand for the assurance it vouchsafed. On this assumption of the trace in it of oriental influence we think of Cos, the island lying off the coast of Asia Minor. We do not protest indeed at the sentiment of the Cleitophon, but there can be no doubt this "was the useful and profitable thing to do," in that locality especially, and especially for the family practitioner.

This attempt on my part at the modernization of Athens in the time of Plato is apt to become a little strained and even grotesque if it is pushed too far, but I will venture upon one more example of it and it will be easy to find in all histories of ancient medicine the references to the sayings of Herodotus and of Celsus which set it forth. When Herodotus noted the splitting up of the Egyptian profession into specialties, he noted a fact in a land of great cities and a teeming population. One cannot but be surprised and think that Herodotus would surely have been astonished, if he had known that Celsus in a crowded and imperial Rome evidently noting the same thing, thinking of its eye specialists and accoucheurs, would allow his thoughts to travel back six or seven centuries and suggest that Hippocrates himself was a specialist in a way. It was he, was it not, differentiated medicine from the other sciences and made it his specialty? The *Ancient Medicine* and *The Airs, Waters and Places* prove how great he was in philosophy, but medicine was his specialty. Yet Herodotus, the contemporary of Hippocrates, would hardly have thought of the isles of Greece and its stony coast lines demanding such a specialization. The specialization of the sciences depends then not entirely on crowding populations in large cities, but on crowding thoughts as well. Specialization in practice doubtless depends on the thronging city, but specialization of thought depends on the rich-

ness of intellectual life. Civilization means something more than flourishing cities. The latter indeed may divide the practice of medicine, but there is something else at work which produces in the same age great men in medicine, great physicists, great philosophers, great dramatists, great poets, whose works bid fair to endure forever, great historians who have set models of style so different as those of Herodotus and Thucydides towards the perfection of which historians are still striving and regarding the differing merits of which they are still unconsciously quarreling.

The *Lesser Hippias* is not usually reckoned among the genuine Platonic dialogues. Both it and the Cleitophon are supposed to be productions perhaps of pupils imitating the master or of later plagiarists trying to sell wares labelled with the name of Plato. The *Lesser Hippias* is not so low in the fibre of the thought and style as entirely to warrant this criticism, it seems to me, but I am not familiar with the other arguments excluding it from the list of Plato's undoubted works. At any rate it marks the fact that in the time of Plato or shortly succeeding it, there was discussion of the pros and cons of specialization of knowledge in Athens. Like every question for Socrates it had two sides. In the *Lesser Hippias* it served his purpose for the moment to ridicule those pretending to or thinking they possessed universal knowledge. He parades Hippias in ironical fashion as an encyclopaedic person on his way to the Olympic games fully equipped with everything he had made himself. He was decked out with seal rings he had made himself, with cloak and tunic and girdle and sandals and in his traveling bag he carried a strigil and a flask with home brew (—of oil), all his own. Under his arm were poems, epic, tragic and dithyrambic. "I forget what else you said you had with you of your own manufacture, but I remember you were a memory teacher, too." Stabbing men under the fifth rib thus is what led Socrates to his doom.

There is nothing so enlightening as to the seething mentality of the epoch as this play of wit of Socrates on the problem we actively discuss today,—how to synthetize the vast ocean of facts revealed as the product of Greek genius for objective and subjective research. We owe it to Dupréel to have pointed out in his "Socratic Legend" that the *Dissoi Logoi,* the student's note book, contains jottings of such lectures delivered at some Chautauqua under the shadow of the Acropolis something like twenty-five hundred years ago. In this age of all-pervading specialism we know that at that time, on the basis of what for us would probably seem an infinitesimal number of facts there was a very marked specialization of mental activity, but there were still a few people like Hippias, game for Socrates, who pretended to know how to do everything and no doubt there were a fewer still whose personal vanity was so whetted by a realization of the many things they did well they really believed they *could* do everything. A story is told of Lord Brougham by Lord Grey of the Reform Bill apropos of his imperturbable confidence in his own ability. They were on horseback, Lord Grey in the lead, as they came to a swollen stream. Familiar with it, but when half over finding it deeper than he had expected as he approached the center of the ford, he turned in his saddle and called back: "Brougham, can you swim?"

"I never have, my lord, but I have no doubt I could if I tried."

Socrates is represented by Plato in the fifth century B. C. as ridiculing the encyclopaedic Hippias for being fitted out on his way to Olympus with everything material and immaterial made by himself he was likely to use. We find in the story of Lord Grey told on Brougham the irony, which was, by the time of the beginning of the 19th century A. D., again in the air for the encyclopaedists at the end of the 18th century. By the end of the 19th specialism was in full bloom and the protest against it is only occasionally vocal.

Experiments on Man Demonstrating the Dynamogenic Power of a Liquid Extract of Animal Testicles

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On the first of last June, I made a report to the Biology Society, which has been followed by many others showing the remarkable effects produced upon myself by some subcutaneous injections of a liquid obtained by grinding up in a mortar a testicle of a dog or a guineapig with the addition of a little water. I have made this experiment with the conviction that I would obtain from it a notable increase of the power of the nerve centres and especially that of the spinal cord. As will be shown immediately, the results surpassed my hopes; but I have never by word or pen expressed the idea that these injections could "repair the *irrepairable* ravages of old age." I have only said and still believe that it is perfectly possible to repair "the *repairable* ravages of old age."

I hope that all fair minded men (*de bonne foi*) after a complete study of the facts and arguments will come to coincide with my opinions.

I.

The physiological and clinical history of the testicles is full of interesting and well known facts and leaves no doubt as to the role played by these organs.

Who does not know that in regard to intelligence, morale (*moralité*), and physical powers, that those who in infancy have lost their testicles by disease or otherwise, or those in whom these organs have remained in the abdomen, in which case they do not

possess their functions, are indeed inferior to other men? They are abnormal beings (*degradés*). It cannot be doubted that the testicles give to man his noblest and most useful attributes (*utiles attributs*). Cannot it be said of a man active, intelligent, (*honnête*) physically fit, brave and strong, here is a true male? On the other hand, it is well known in men who are not ill, that a considerable variation in the degree of cerebral and medullary (spinal) (*médullaire*) power is associated with a very great variation of the testicular power: the greater the sexual activity the greater the strength of the nerve centres.

It is well known that in people afflicted with diseases of the testes, in those who overindulge sexually, and those who are given to masturbation, and especially in those who suffer from seminal losses, there is a very great diminution of their physical and mental forces. That very instructive book by Lallemand on seminal losses (*Des pertes séminales involontaires,* Paris, 1836-1842, three volumes) is full of observations in that regard.

A study of the facts shows that in these cases besides the (*fâcheux*) grievous effects which can come from irritations of the sexual organs, there are weaknesses (*des diminutions de force*) similar to those observed in eunuchs' weaknesses, which incontestably depend on those substances which they lack. Because of frequent spermatic emissions they do not contain a sufficient amount of the principles which the testicles furnish for resorption.

Facts of an entirely different order also lead to the conclusion that through absorption certain substances contained in the sperm aid in increasing the forces of the nerve centres.

Normal men (*bien organisés*) of twenty to thirty-five years of age, who for one reason or another are absolutely continent sexually and who have no seminal losses from any cause whatsoever, such as an erotic dream, are in a state of excitation accompanied by mental and physical activity. Perhaps this excitation may be morbid, but it is nevertheless very great. This condition of spermatic plethora establishes just as well the dynamogenic power of the resorbed seminal principles as does the facts relative to a spermatic impoverishment.

I have received during the past months the confidential statements of a number of men who are between forty-five and fifty-five years old. They affirm that since their sexual power is diminished somewhat, they have proved that their physical and intellectual forces have become weaker after each coitus and then gradually become stronger up until the next sexual indulgence which took place twelve to fourteen days after the first. Without causing too much fatigue, sexual intercourse, as I have said, diminished their activity but in proportion to the subsequent replenishment of the supply of sperm that activity was increased, remarkably with some.

II.

These facts and others as well have led me for some time to the thought that the weakness of old men depends in part on the gradual diminution of the activity of the testicles.

In a course given at la Faculti de medicine de Paris in 1869, I said that if it were possible to inject without changes the sperm of a vigorous animal into the veins of an old man, there would probably be obtained a notable improvement in the enfeebled forces of that individual.

Imbued with similar ideas I was led to perform in 1875 numerous experiments, some of which have given extremely interesting results. But only one of them, however, has well demonstrated the considerable influence which testicles of a young animal can have upon an old dog.

For some years I have had the idea of injecting under the skin of some old and enfeebled male animal an extract made from the testicles of young and vigorous mammals. These tests made nine months ago upon some old rabbits having well demonstrated on the one hand the harmlessness of the procedures and on the other hand the importance of its use, I decided to make upon myself some experiments which appeared to me ought to be in all respects more conclusive than those made on the animals.[1]

III.

Here are in all their important details the experiments which I have made upon myself.

I am seventy-two years old. I am in general in very good health except for rheumatism and *merycisme* (regurgitation of food). Not having taken any exercise for the past thirty years my natural vigor which had been considerable had gradually diminished and for the past ten or twelve years I have become very feeble.

On the 15th of last May with the assistance of Messieurs d'Arsonval and Hénocque I removed one testicle from a very vigorous dog of from two to three years of age after I had tied off the venous plexus. After cutting all of it, including a large part of the vas deferens, into small pieces I threw it into a mortar and added a minimal amount of water. It was then ground, with breaking up of the pieces in such a way as to bring out as much of the juice as possible. After adding more water, all the liquid obtained as well as the portions of the gland was placed in a good paper filter. Filtration took place slowly and about four and one half centimetres of light rose colored liquid, slightly transparent, was collected.

I injected under the skin of one of my legs almost a cubic centimetre of this liquid. The next day and the following day as well on May 24th, 29th, and 30th, and on June 4th, I repeated the injections. The last five were made from a liquid prepared from very vigorous guinea pigs, both young and adult. There were ten injections altogether, almost all in the legs, the others in the thigh and left arm. In all cases the proportion of liquid drawn from the testicles had never been more than a fifth of the mixture with water. Each injection was about one c.c. of the mixture. It consisted of three distinct parts, first blood, secondly the sperm and thirdly the juice of the gland. These different substances were employed together.[2]

[1]In another work I will report the different experiments which this subject led me to make and in particular those with testicular grafts.

[2]For reasons which I have given in a number of lessons in 1869 and following I considered the spermatic glands as well as the other principal glands (liver, kidneys, etc.) as endowed, apart from their power of secreting, with special influence on the blood, such as is possessed by the glands without an external secretion like the spleen, thyroid, etc. With this in mind I have made experiments with blood returning from the testicles; but the results have not been conclusive enough to be described.

In almost every case I used the Pasteur filter. Dr. Henocque is satisfied that no cell (*corps figuré*) and consequently no spermatozoa can pass a filter of this kind. The effects which I have observed are therefore not due to any spermatozoa (*animalcules du sperme*).

The liquid used was transparent and colorless. All the injections had been from the first a little more painful than those of pure water or that containing alkaloids. Within a short time varying from a few minutes to a quarter of an hour the pain left but after half or three quarters of an hour it returned and acquired very rapidly in most of the cases a very great intensity. Its violence was so great that it was almost impossible to sleep the nights which followed almost all the injections. The least period of the intensity of this pain was ten to twelve hours but it has in general, after a very general diminution, persisted for many days.

Accompanying this phenomenon an erythematous redness and sometimes venous striæ (*stries d'angioleucite*) appeared with swelling and heat in a space two to three centimètres in diameter, not at the site of the needle prick but over the part where the liquid was deposited. The pain and the inflammation were much more marked on the lower extremities than on the upper.

I have been able easily to avoid the bad effects of the injections merely by diluting to a greater degree the extract of the gland used. But I wanted to know exactly the risks of the experiment and also to obtain the maximum good results possible, and for these reasons I preferred a concentrated liquid.

I am bound to say that the very numerous experiments made on dogs and rabbits have shown the harmlessness of these injections and I believe consequently that it can be said that even if the local reactions are painful there will be no bad effects.

Before pointing out the favorable results of these tests, I pray that I may be pardoned for speaking about myself. I hope that it will be easily realized that this portrayal will not have the proper value without a knowledge of my health, my vigor and habits before these experiments and those effects obtained afterward.

My general vigor, which had been considerable, had gradually and noticeably diminished during the last ten or twelve years. Before the fifteenth of May, the day of the first injection, I was so weak that it was necessary for me to sit down after half an hour of work standing in the laboratory, I went away always exhausted after three or four hours of experimentation and sometimes after two hours.

From 1879 to 1881 and for the past two years I have lived some distance from my laboratory and had to go home about six o'clock in a carriage after a few hours passed in experimental work. I was so tired that it was necessary to go immediately to bed, after taking a very small amount of food. Frequently in the past ten years the fatigue was so great after the laboratory work that I could not go to sleep for a very long time, although, prone to slumber, I arose excessively tired, having slept only a very little.

The day following the first injection and more so on the days following (five injections were made in three days, May 15th, 16th, and 17th) a radical change took place in me and I have the most sufficient reasons for saying that by the first of June, I had regained at least all the strength which I had possessed for a number of years past.

A considerable amount of work in the laboratory scarcely tires me. To the great astonishment of my two principal assistants and to others I became able to experiment for many hours standing erect and not feeling any necessity for sitting down.

Moreover, on one day, May 23d, after standing for three and a quarter hours doing very fatiguing experimental work I went home so little tired that I was able after dinner to begin a work, for publication, or a résumé of some very difficult problems. It had been twenty years since I had ceased to be capable of doing so much.[3]

(*To be concluded*)

Samson's Hair.—Every one knows the old saying, *Vir pilosus seu fortis, seu libidinosus.* The ancients believed that there was a direct connection between abundance of length of hair, moral force, physical strength and a leaning toward the delights of love. The biblical story of Samson overthrowing the Temple of Baal, massacring the Philistines, symbolizes the prodigious physical power of man heavily hirsute. We know how Delilah, with whom he was smitten*, succeeded, for eleven hundred pieces of silver, in delivering him over to the Philistines; she put him to sleep on her knee, called a barber and had him cut off Samson's seven braids of hair. Thus the Hebrews believed that the great strength of Samson resided in his hair, and that this only needed to be cut off to deprive him of his superhuman force and render him powerless. Analogous beliefs are to be found everywhere in all ages. Sir George Frazer reminds us in chapters of his *Folklore in the Old Testament* that "stories similar to that of Samson and Delilah are frequent in the legendary history of ancient Greece. It was said that Nisus, king of Megaridus, had on his head purple or golden hair and that he was ordained to die on the day when this hair should be torn away. When Megara was besieged by the Cretans, Scylla, his daughter, fell in love with Minos, king of the Cretans, and tore the fateful hair from her father's head. He died. According to another tale, it was not the life but the strength of Nisus that resided in his hair of gold; when he was deprived of it, Nisus became feeble and was slain by Minos. Thus the aborigines of the Island of Amboine thought that their strength lay in their hair and abandoned them if their tresses were cut. A criminal being examined by the Dutch denied his offense up to the moment when they cut off his hair; then confessed at once. In Europe there was a belief that the evil influence of sorcerers resided in their hair and that nothing was able to make the least impression upon these miscreants as long as they kept it. Also in France there was a custom of shaving the whole body of those accused of sorcery before delivering them over to the headsman."
—Translated from *Æsculape*.

[3] My friends know that for thirty or forty years work after dinner was impossible and I had the habit of retiring about half past seven or eight o'clock and doing in the forenoon only three or four hours work. After my first injection I was able to do very ponderous intellectual work for two, three and even one time four hours after my dinner.

Editorial Articles

THE CAUSE OF CANCER

As announced in the *Lancet,* July 18th, Dr. W. E. Gye and Mr. J. E. Barnard, F.R.S., have made some investigations into the cause of malignant growths which promise to reveal the cause of cancer, or rather the activating cause. Dr. Gye is careful to state that several factors are necessary for the production of the disease. With the aid of Mr. Barnard, who it appears has so modified the microscope that by its use viruses which hitherto have been invisible can now be observed, Dr. Gye has isolated a virus. At any rate, by the employment of such a microscope Mr. Barnard has studied the cancer virus cultured by Dr. Gye and has not only succeeded in rendering the virus visible but even in photographing it.

As pointed out in a brief editorial in our last issue the investigations carried out under the auspices of the British Institute of Medical Research were based upon or rather a continuation of researches initiated and carried to a certain stage by Dr. Peyton Rous of the Rockefeller Institute. The conclusions reached or perhaps led up to by the British investigators are somewhat as follows: Malignant new growths contain an extremely minute virus, or group of viruses, which can be cultivated. It is believed that the virus resides probably within the cells of the neoplasm. It is interesting to know that the viruses of the carcinomata and sarcomata of fowl, mice, rats, dogs and man can be cultivated. Evidence afforded by the researches of Dr. Gye and his co-workers show that the tumors produced in their experiments have a common factor, the virus, and a specific factor peculiar to every tumor, the accessory chemical substance which has manifested such startling properties. As far as is known at present one factor is impotent for evil without the active cooperation of the other factor, and the question is how does this accessory chemical substance or intrinsic cause of cancer originate in the body?

As a matter of fact there are numerous gaps in the presentation of Dr. Gye's argument which must be filled up ere the case is complete and conclusive. It is more than likely that his researches have carried him considerably further, and that many, if not most of them are filled up already. In the clearly conceived and written editorial on the subject published in the issue of the *Lancet* referred to above, a full explanation is given of why Dr. Gye's observations may be perhaps accepted as a solution of the cancer problem and an instructive sketch is made of the ups and downs of the "germ theory" of cancer. The point, however, that even in the light of Dr. Gye's work it would be foolish to state that the presence of an organism by itself can wholly account for cancer, must be apprehended in its entire significance. It seems that a correct exposition of the cancer situation at the present time is to say that cancer cannot be explained by postulating an entirely extrinsic origin. It is satisfactory to know that the line of investigation pursued by Dr. Gye and colleagues was suggested, indeed established, by an American worker and that American investigators have been well in the foreground in the attempts to solve the cancer problem.

Dr. W. B. Coley, the New York surgeon, has been ever a firm believer in the microbic origin of cancer and in a symposium on cancer at the Clinical Congress of the American College of Surgeons held in New York, October 20-26, 1924, recapitulated his faith in the parasitic theory, and suggested that the cancer parasite postulated by him required cataphylaxis to attack the cells so as to produce the cancer lesion. He urged and it now appears quite rightly that the theory of a microbic cause of cancer should not be regarded as a closed chapter. Put into plain language, it may be stated that the parasitic origin of cancer has been upheld by the result of the investigations of Dr. Gye and Mr. Barnard. It appears that there is a cancer germ but there is also a "growth factor" the "specific factor" of Gye, in the absence of which the germ is harmless, and it is upon this substance that attention will be chiefly concentrated.

In connection with Dr. Gye's discoveries Dr. James Young, of Edinburgh, speaking at the Royal Sanitary Institute Congress in Edinburgh on July 22d, said that he first described in 1921 a microbe which he was led to look upon as a cancer parasite. Since then he had found this microbe in cancers of all kinds, and was convinced it was in truth the cancer parasite. He thought it probable that Dr. Gye's ultramicroscopic virus was identical with his own and was one phase of the cancer parasite. If his views were correct the cancer parasite belonged to the most familiar and the universally distributed types of bacteria. He had consistently pointed to the necessary existence of another factor wholly different from, though linked up with, the microbe in the production of cancer. Dr. Gye's work, he said, marked a step forward in their understanding of this accessory factor, for it apparently showed that it could be isolated and stored in the test tube. This was a discovery as unexpected as it was important

and would carry them far in their experimental attempts to probe the phenomena underlying the genesis of cancer.

In an address published in the London *Times,* July 23d, which was said to have been given by Dr. Gye before the Section of Pathology and Bacteriology of the British Medical Association on July 22d on the filter passing viruses, he is reported to have expressed the opinion that the tiny "filter passing" viruses act on the body cells in a manner different from that of the larger microbes. The probability was that they actually entered the body cells and dwelt within them. They could not be stained. They were not merely phases in the life history of larger organisms. On the contrary, "the doctrine of fixity of form" seemed to hold good for them as for larger organisms.

As stated previously, it is almost certain that there remains yet much to be published with regard to the British Institute of Medical Research's investigations and that Dr. Gye, Mr. Barnard and colleagues are unwilling to make public any more results and premises therefrom until they have convinced themselves that they are founded on a sound basis. But if, as Dr. Francis Carter Wood said in an article in the New York *Times,* July 19th, if Dr. Gye has found out a germ which gives the cancer cell the impulse to grow then the use of a serum would only be in prevention not in treatment. The possibility of such prevention is very great, should Dr. Gye's work prove generally applicable to all types of human cancer. In any event, a long step in advance has been made, and as Dr. Wood says, "another brick has been placed in the foundation of the great edifice of our beginning knowledge of cancer."

While extravagant hopes are to be deprecated, further news from Dr. Gye and colleagues will be awaited with the anticipation that the first account is but an instalment and that subsequent accounts will trace the history of the researches to a more definite issue.

It may be added that the distinctive feature of the British researches is that they seem to hold out a means of prevention and not of cure. The cancer virus in itself appears to be harmless. It only becomes menacing when the accessory chemical substance is present and when the resisting powers of the system have been broken down or lowered by the introduction of degenerated tissue. If it be proved by further investigations that carcinoma as well as sarcoma are due to these causes, it also seems to demonstrate that the only certain methods of conquering cancer lie in preventing cancer, preventing the body from providing a favorable soil in which it may be harbored and wreak its harmful effects under the most favorable circumstances.

THE SURGICAL COMPLICATIONS OF TYPHUS AND RECURRENT FEVERS

Dr. Jean Rudelle, who was in the French Army in Roumania during the fearful epidemic of typhus and recurrent fever of 1916-1917, has recently published a complete memoire (*Thesis,* Paris) on the surgical complications of these infections. The complications arising in each need not be separated, because typhus and recurrent fever may occur together or successively in the same subject, the louse being the etiological factor common to each. Also the surgical complications of typhus and recurrent fever are often practically identical, hence it is difficult to attribute them with certainty to one or the other when a precise history of the case is unattainable.

In recurrent fever only suppurating processes, offering special characters and variable localizations, are encountered, involving the cellular tissue, lymph nodes, bones, joints and organs of sense.

In typhus suppurating processes are also met with although their characters are somewhat peculiar. But what is especially interesting is that arteritis of the large vessels of the limbs or arteries of the external genital organs, resulting in gangrene, is specially prone to occur.

The infectious complications of both typhus and recurrent fever are due to secondary infection from the common bacteria of suppuration. The arteritides are due to the action of the toxins on the arterial coats, ending in thrombosis. Histological examination of the vessel shows that this arteritis in no way differs from the same process arising in other infectious diseases.

The complications in recurrent fever develop after one or several attacks, while in typhus they occur after the twelfth day of the disease, more frequently during convalescence or even later. The suppuration in recurrent fever is torpid, the pus is thin, fluid, containing necrotic tissue. Cicatrization is abnormally slow. Gangrenous abscesses may develop.

The suppuration of typhus is also torpid in most cases but the pus is thicker with a tendency to extend in depth rather than in surface, while gangrene is more common than in recurrent fever and is of the dry type; exceptionally it is moist, and is then much more serious. The lower limbs and genital organs are the favorite site, the upper limbs being rarely involved. Some of the gangrene cases are very difficult to differentiate from extensive freezing followed by mortification.

The prognosis of these surgical complications is serious and increases the death rate of typhus. Several of them are in themselves serious, but many are only so because they develop in debilitated or cachetic subjects, unable to withstand the slightest surgical

interference. General anesthesia is especially serious in these circumstances.

The foci of suppuration should be opened with very small incisions, excepting gangrenous phlegmons which require free incision and excision of the necrobiotic tissue. Dakin's fluid gives excellent results.

Dry gangrene of the limbs should be dealt with surgically only when the phase of elimination is reached with a distinct line of demarcation. Rudelle advises interference in two stages, the first being division of the structures at the level of the line of demarcation in order to separate the gangrenous portion from the living structures. Two or three weeks later, when the divided tissues are a healthy red, a flap amputation or an appropriate autoplastic amputation is carried out.

Moist gangrene must be dealt with without any delay by amputation high above the upper limits of the process, or disarticulation may be done. The parts should never be sutured. General narcosis with ethyl chloride gave excellent results. Chloroform especially should never be used.

ROTATION IN SPECIALISM

Time was when a physician or a public health officer might be a specialist in many lines. A hundred years ago such men as Nathan Smith taught everything from chemistry to obstetrics and did it well, and it has not been a generation since the professor of chemistry in a leading medical school was also the professor of hygiene and sanitation. Nowadays it is difficult indeed for the most comprehensive mind to be a specialist in more than one field. However, in the U. S. Public Health Service, through force of government inertia, a surgeon in charge is still presumably capable of grasping all the details of any branch of public health work from hookworm investigation to quarantine, plan and direct such work at first glance and then be ready in a quadrennium to proceed to some other specialty, not even of his own choice, and be as superbly efficient and sufficient in his new calling for the next four years. This is akin to serving as specialists in ophthalmology, otology, pediatrics, orthopedics, and other fields for periods of four years each and, besides, to direct successfully the work of other workers under his charge in these lines. The director of research in industrial hygiene becomes in forty-eight months a director of cancer research or is shifted to the superintendency of a marine hospital.

That public health officers can adapt themselves to these changes so well as they do signifies much, but that they could do better work if their training and their aptitudes were consulted and they were not so shifted, goes without saying. Certainly nothing like it would be thought of for employees in the Department of Agriculture, in the Treasury, or in the Bureau of Standards.

The four year cycle suggests that, in its origin, this moving about from pillar to post was connected with the presidential overturn. When it originated it probably mattered little from a professional or from an economic viewpoint, but there is every reason today why the public health servant should be placed in that kind of work for which he is especially trained and adapted and kept there. This is now the case with public health officers who are not members of the regular corps who work under those of the regular service.

THE DIAGNOSIS OF OXALEMIA

Foremost among the symptoms of oxalemia should be placed the minor signs which are the forerunners of established intoxication. Among them should be mentioned a state of digestive distress although without any real pain, a torpid liver, constipation, dysuria, pollakiuria and urethral irritation; headache, migraine, and muscular and bone pain.

Among the major signs some are evident while others must be sought for until their character becomes progressively accentuated. Loeper and Tonnet enumerate the following characteristics: nausea, mucorrheic state of the intestine, with spasm, solar paroxysms, fatigue and nervous depression even reaching psychasthenia, defective memory and high blood pressure. Then albuminuria, leucocyturia and hematuria supervene, the latter contrary to the hematuria of tuberculosis being afebrile, while in cancer of the urinary tract the amount of blood lost is greater than in oxalemia.

One must also take into account the true accidents of the process, viz., a discrete or intense rheumatism localized in the limbs or around the large joints—perhaps in the form of Heberden's nodes and certain deformities. Also intestinal lithiasis in the form of small, fine, sandy calculi, grayish yellow in color and containing sometimes as much as twenty-five per cent. calcium oxalate. Renal lithiasis may be another symptom, as well as duodenal ulcers giving rise to hemorrhage, often considerable in amount.

All these symptoms may group themselves differently hence giving rise to distinct clinical forms of oxalemia.

Oxalic acid may be searched for in the urine by the technics of Neubauer, Salkowski, Lecoeur or Albahary, but the Loeper-Béchamp technic is more precise as by it one centigram of oxalic acid can be detected.

The dose of oxalic acid in the blood is absolutely

essential because an oxaluria is not sufficient to reveal the extent of oxalic intoxication. The ratio existing between the oxalemia and oxaluria is to be ascertained, because in the normal state the quantitative relation between the two is equivalent. Retention of the acid exists in a large number of cases complicated by severe abdominal paroxysms of pain, rheumatism or calculi.

Oxalic acid is also eliminated in the feces and the dosage of the acid contained in the stools is clinically useful, but the results are questionable in practice.

It is likewise interesting to search for oxalic acid in the cerebrospinal fluid, in the blood in gastric hemorrhage and renal or intestinal sand voided. Its research in the fluid derived from vesication is onlv of value in very marked oxalemia.

THE CHANGING VIEWPOINT OF PUBLIC HEALTH

It used to be the custom, and unfortunately the practice still obtains among those who are pushing health movements, to bombard the community with a rapid fire of reasons why it should desire the initiation of health work and the dire results which would inevitably follow if they did not. Health workers who are thinking about the matter are beginning to realize that this is an expensive and illogical method of approaching the taxpayer and that the ideal method is to create in the public mind a genuine thirst for health protection and better still for health development. Those who are wise in their public health propaganda are beginning to understand that the aim is not to foist something onto the general public which it does not want, but so skilfully to place the emphasis on the desirability of health that the public, which after all is a very canny animal, will have an intelligent appreciation of the quality of health. It is a good plan for health workers to depend upon this rather than upon the personality of the health propagandist, because it credits the community with a mind and a will of its own.

Health work is gradually shifting so that the people are no longer content to be merely protected against the communicable diseases or kept free of sanitary nuisances, people now begin to realize that there is something more than mere passive health and everywhere they are clamoring for those things which will keep them in a state of boundingly efficient reaction to their environment.

The medical profession should acquire this point of view. Heretofore it has placed too much stress on public pathology and too little on public physiology. In their contact with patients there is a great deal which the medical profession should do to promote genuinely active healthfulness. It is looked to as the teacher and in this teaching it should stress the desirability of an actively functioning health as against a passive freedom from disease.

CAUSES OF INFANT DEATHS

A report on the study of the circumstances surrounding the deaths of twenty-three thousand children aged less than one year in eight American cities has recently been issued by the Children's Bureau of the United States Department of Labor. One of the most significant features of this report is that it reveals a direct relationship between the earnings of the father and the life chances of the infant. The report states that "The infant mortality rates from all causes and from each principal cause of death were highest when the father's earnings were low, and lowest when the father's earnings were relatively high. When allowance was made for the variations in the size of the family, the same close correspondence was found between the infant mortality rate and economic pressure as measured by the per capita income from the father's earnings."

Another large contributing factor was found to be congestion in the home. The infant death rate of families living in houses with two or more persons to a room is two and a half times that of those averaging less than one person to a room. Mothers working during pregnancy and during the first year of the child's life have children with less, much less, chance of a life than mothers who do not. When first born infants were excluded, it was found that the mortality rate tended to increase with order of birth, that is, the larger the family the less chance for each succeeding infant to live. Death rates were found to be high also among babies who came in quick succession. A four year interval appeared to be the safest. The month of June shows the highest mortality for children born in it, because they are exposed to an increased danger of gastric diseases of summer time. August is the best month to be born in, and usually boys have a higher death rate than girls.

Obituary.

JOHN ADDISON FORDYCE, M.D.

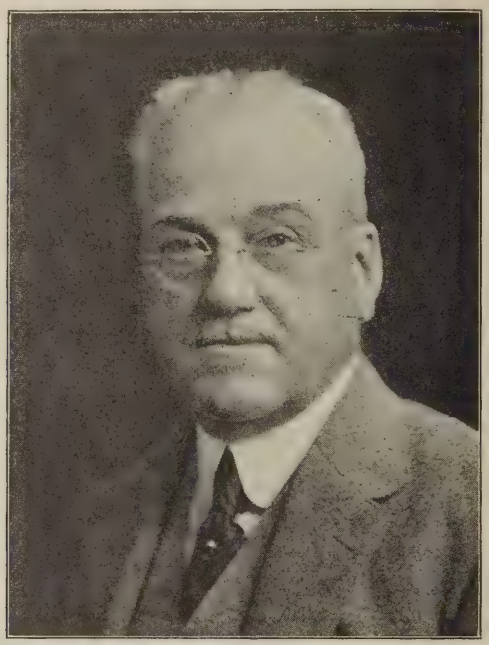
New York

John Addison Fordyce, the well known dermatologist and syphilologist, died on June 4, 1925, at his home in New York city. In his untimely demise, the medical profession has lost one of its best known and ablest members, an indefatigable worker and a keen student.

In the field of dermatology and syphilology, which Dr. Fordyce chose as his special work early in his professional career, he stood foremost among the leaders, and his work exercised considerable influence in establishing dermatology and syphilology on a firmly fixed basis.

Dr. Fordyce was born in 1858 in Guernsey County, Ohio, of Scottish ancestry. He was educated at

Adrian College, Michigan (A.B., 1878, Ph.D., 1901), and was graduated in medicine from the Medical Department of Northwestern University in 1881. After an internship in Cook County Hospital, and a brief period of general practice in Hot Springs,



JOHN A. FORDYCE, M.D.

Arkansas, he devoted several years to the study of his specialty in a number of European clinics. In 1888 he received the degree of M.D. from the University of Berlin.

Returning to the United States, he established himself in New York and rose rapidly in his profession. In 1893 he became professor of dermatology at the Bellevue Hospital Medical College and in 1912 he was appointed head of the same department in the College of Physicians and Surgeons, Columbia University, which position he held up to the time of his death.

Because of his friendship with Paul Ehrlich, Dr. Fordyce was among the first in this country to receive a sample supply of 606 for clinical trial, and he steadily remained a strong advocate of the salvarsan method of treating syphilis.

While the medical writings of Dr. Fordyce were not voluminous, they were considerable in number, particularly since the introduction of the arsenicals in the therapy and the Wassermann reaction in the diagnosis of syphilis. His literary work always bore the stamp of authority and carried conviction at all times. Among his European confrères he was highly regarded, both professionally and personally, and they were pleased to accord to him the honor of corresponding membership in a number of European medical organizations.

Those who had the pleasure of coming into personal contact with Dr. Fordyce, found him not only a great physician but a splendid gentleman, urbane, courteous and ever ready with a cordial yet restrained greeting. His place in the medical life of the great metropolis will be hard to fill. He is survived by his widow and two children.

ALBERT JOHN OCHSNER, B.Sc., M.D., LL.D., F.R.M.S., F.R.C.S. (Ire.), Hon.

Chicago

Ochsner is gone. His passing was so rapid, so unexpected. On Tuesday morning, July 21st, he was seized with an attack of coronary thrombosis, and at early dawn on Saturday, July 25th, he passed away. One week after his first evidence of illness he was laid to rest beneath the pine trees in the little churchyard cemetery of his ancestors at Honey Creek, Wis.

The world has lost a great man, a lovable character, an accomplished and industrious surgeon. Few have striven harder in the pursuit of their lifework than Albert Ochsner. Few lives have been more devoted to the welfare of mankind and of him it may well be said that he gave his life to his calling. He will be missed. His vacant chair at surgical congresses will be difficult to fill; but his name and works will not be forgotten.

Dr. Ochsner was born in Baraboo, Wis., on April 3, 1858, the son of Henry and Judith (Hottinger) Ochsner. He received the degree of B. Sc. from the University of Wisconsin in 1884, the degree of LL.D. in 1909, and M.D. from Rush Medical College in 1886. He was an intern in the Presbyterian Hospital 1886-1887, and took postgraduate courses at the Universities of Vienna and Berlin in 1887-1888. He married Marion H. Mitchell, of Chicago, on April 3, 1888.

He practised medicine in Chicago from 1889-1925, was instructor in surgery at Rush Medical College, 1889-1895; professor of clinical surgery, University of Illinois, College of Medicine, 1900-1925; chief

A. J. OCHSNER, M.D.

surgeon, Augustana Hospital, 1891-1925; and St. Mary's Hospital, 1896-1925. He spent two weeks of every three months at various surgical clinics in the United States, 1895-1907. He was a first lieutenant in the United States Medical Reserve Corps,

1908-1916, and a major in 1916. He was on active duty during the late war.

He was president of the Clinical Congress of Surgeons of North America, 1910-1912; founder of the American College of Surgeons, regent and treasurer, 1913-1925, president 1923-1924; fellow, American Surgical Association (president, 1924); member, Southern Surgical and Gynecological Society, American Medical Association (chairman, Surgical Section, 1901), Illinois State Medical Society, Chicago Medical Society, Chicago Pathological Society, Chicago Surgical Society, International Society of Surgeons; fellow, Royal Microscopical Society of England; honorary fellow, Royal College of Surgeons in Ireland; honorary member, National Academy of Medicine of Mexico, National Surgical Society of the Republic of Switzerland, and Medical Society of Stockholm; member of the editorial staff, *Surgery, Gynecology and Obstetrics.*

He was the author of numerous books, among them being *Handbook on Appendicitis* (first edition 1902, second edition 1906); *Clinical Surgery for the Instruction of Practitioners and Students* (first edition 1902, second edition 1905, third edition 1912); *Thyroid and Parathyroid Glands,* 1910; *Yearbook on Surgery,* 1917-1925; *Surgery of the Thyroid Gland; Treatise on Surgical Diagnosis and Treatment,* 1918; *Organization, Management, and Construction of Hospitals* (first edition 1907, second edition 1913), and many monographs on surgical subjects.

News Items.

Industrial Hygiene.—A plan for the protection of the health of workers in small industrial plants is being developed by the Philadelphia Health Council, under the direction of Dr. William J. McConnell, formerly of the U. S. Bureau of Mines, Pittsburgh.

Health Officers to Meet.—The Pacific Coast Conference of Health Officials will hold a meeting at Long Beach, California, September 28th to October 3d, and the annual meeting of California health officers will be held at the same place and time.

Wisconsin Medical Education.—The University of Wisconsin is now prepared to offer a four year medical course, leading to the degree of M.D. Heretofore only two years were given. The new Wisconsin State Hospital at Madison will furnish the necessary clinical facilities.

Heart Disease Mortality.—Figures for the last twenty years in Illinois show the death rate from heart disease increasing from 90 to 176 in hundred thousand of population; the disease now ranking first instead of third as a cause of death. The increase is tabulated at 145 per cent.

Wilmer Eye Institute.—Dr. Cecil H. Bagley of Johns Hopkins Hospital has been selected as first assistant of Dr. William H. Wilmer, of the new Wilmer Eye Institute of Baltimore. Dr. Jonas Stein Friedenwald of Johns Hopkins is to conduct researches in the cause and development of eye diseases.

Child Guidance Clinic.—A child guidance clinic, to be conducted for two years and financed by the National Committee for Child Hygiene, has been opened at the Children's Hospital, Philadelphia. Dr. Frederick H. Allen, resident psychiatrist at the Phipps Institute Clinic, has been appointed director, and Dr. Christina M. Leonard is chief of staff.

Researches in Gallbladder Visualization.—A series of experiments in gallbladder visualization of infancy with the aid of tetraidophenolphthalein sodium are being carried on at the Infantorium of the Heckscher Foundation, New York. The experiments are being conducted by Dr. Louis Fischer, in association with Dr. Max Einhorn; x ray studies will be made by Dr. Charles Gottlieb.

Federal Trachoma Work.—The U. S. Public Health Service has moved its headquarters for the conduct of trachoma eradication from Louisville, Kentucky, to Rolla, Missouri. Surgeon Paul D. Mossman continues in charge of the work.

Medical Library.—The library of the College of Physicians and Surgeons, New York, and the Janeway Library of the Presbyterian Hospital, will be consolidated in the new medical centre; the library will occupy the whole north front of the main building, above the entrance, and will provide a main reading room with space for one hundred and fifty students, alcoves for those doing medical research, book stacks and special study rooms, and also a faculty reading room for one hundred doctors.

Tetraethyl Gasoline Investigation.—Dr. J. F. Leake, of the U. S. Public Health Service, has been detailed to take charge of the Service's part of the investigations into dangers in the use of tetraethyl gasoline. Studies will be conducted in a middle Western city where this gasoline has been in use for several years and similar studies made in an Eastern city. Experimental garages will be maintained. Clinical and chemical studies will be made of the workers. The Service expects to present its findings in October.

American Academy of Physiotherapy.—For the next meeting of this association, to be held in Boston, October 15th to 17th, the following tentative programme is announced:

Electrophysics, by Prof. Duane of Harvard; Treatment of Sprains, by Dr. Charles P. Hutchins; The Curative Workshop, by Dr. Fred H. Albee; Electrosurgery, by Drs. Wm. D. McFee, Wm. L. Clark and Grant E. Ward; Galvanism in Neurology, by Dr. James MacPhee; the Aftercare of Fractures, by Dr. Harry Eaton Stewart; Hydrotherapy, by Dr. Robert E. Peck; Taking things for Granted, by Dr. Burton B. Grover; Intestinal Stasis and Toxemia, by Dr. William Seaman Bainbridge and Sir William Arbuthnot Lane, Bart; Application of Clear Quartz to Physiotherapy, by Dr. Berry; Indications for the Use of X ray in the Treatment of Breast Tumors, by Dr. Walter C. Barker; Some Reason for the Delay of the Correlation of Physiotherapy with General Medicine and Surgery and the Specialties, by Dr. Charles F. Stokes; The Rationale of Fraction X radiation Therapy, by Dr. J. Douglas Morgan, etc.

Clinical demonstrations in physiotherapeutic technic including electrosurgery, will be given in the Boston City Hospital.

Personal.—Dr. Chevalier Jackson of Philadelphia has been made a member of the Legion of Honor. Doctor Jackson is now in France lecturing at the University of Paris.

Dr. Allen K. Krause, of Johns Hopkins University will give a series of lectures in Chicago under the auspices of the Chicago Tuberculosis Association, beginning October first.

Dr. S. S. Goldwater, of Mount Sinai Hospital, New York, has been selected as consultant in the building of the new Syracuse Memorial Hospital, Syracuse, New York.

Dr. Herman Goodman has removed his office to 18 East Eighty-ninth Street, New York.

Dr. Louis Faugères Bishop of New York will have associated with him after September first, his son, Dr. Louis Faugères Bishop, Jr.

Dr. Shirley W. Wynne, of New York, has been appointed director of the bureau of hospitals, Department of Health of the City of New York.

Dr. Harold W. Wright has been appointed field psychiatrist to the bureau of mental health of the Pennsylvania State Department of Welfare. Doctor Wright is at present consultant to the U. S. Veterans' Bureau, in San Francisco

Dr. Horace Packard, for many years professor of surgery at the Boston University School of Medicine, has retired from active practice, in his seventieth year.

Dr. Watson S. Rankin, secretary of the state board of health of North Carolina, has resigned, and Dr. George M Cooper, assistant secretary, is in charge pending an election. Doctor Rankin took up his duties with the Duke Foundation the first of June.

Dr. George W. Goler, who has been health officer of Rochester, New York, for twenty-five years, received the honorary degree of doctor of science from the University of Rochester.

Miss Adelaide Nutting, professor of nursing at Teachers College, Columbia, for eighteen years, has retired.

Dr. Harry R. Litchfield, M.D., of Brooklyn, New York, is studying abroad during the summer.

Book Reviews

HEART DISEASE

Clinical Features of Heart Disease. An Interpretation of the Mechanics of Diagnosis for Practitioners. By Leroy Crummer, M.D. Introduction by Emanuel Libman, M.D. New York: Paul B. Hoeber, Inc., 1925. Pp. 353.

The book, as its name indicates, attempts a presentation of the essentially clinical features of heart disease. It contains many valuable facts and suggestions, but these are not always as clearly coordinated as might be desirable. The chapter on cardiovascular renal disease is rather unsatisfactory, although the author properly emphasizes the variability of blood pressure readings and the futility of all the socalled specific methods of therapy. Most cardiologists will not agree with Dr. Crummer that aortic insufficiency is frequently due to pneumococcus infection or that auricular fibrillation is quite unknown in aortic insufficiency. The concept that angina pectoris is a symptom of failure of the reserve power of the aorta is not very satisfying. Indeed, the phrase "reserve power of the aorta" leaves much to the imagination.

The author's style is fluent and the book is attractively printed and bound. It would be considerably improved, however, by a rigorous blue pencilling of unimportant material. The chief value of Dr. Crummer's work lies in the fact that it is a logical clinical presentation, written from the fundamental physiological and pathological viewpoint.

CARDIAC IRREGULARITIES

The Heart Rhythms. By Paul Dudley Lamson, M.D., Baltimore: Williams and Wilkins Company, 1921.

It is the purpose of this book to give a simple, but physiologically correct account of the normal and abnormal heart rhythms. This has been admirably achieved in the first part of the book within the compass of forty-two very readable pages. In the second part Dr. Lamson gives a brief description of the electrocardiograph, and a more detailed account of the technic of interpreting polygraphic curves. The booklet can be highly recommended as an introduction to the study of cardiac irregularities.

TREATMENT OF HEART DISEASE

Médicaments et Médications Cardiaques. Par H. Vaquez. Paris: J. B. Bailliere et Fils, 1925.

This book is a compilation of the lectures of Professor Vaquez on the treatment of heart disease, made by one of his students, Dr. Theodoresco, and edited by Dr. Vaquez himself. It is written in a very readable, fluent style. The first chapter is devoted to a historical review of the clinical use of digitalis. The author then proceeds to discuss the pharmacodynamics and therapeutic indications of digitalis, strophanthus, and quinidine. In severe cardiac insufficiency with extreme dilatation Vaquez finds that digitalis does more harm than good. In such cases he asserts that very good results have been obtained from the use of ouabaine, but he emphasizes that it is essential to employ only ouabaine prepared from strophanthus glabre by the method of Arnaud. This drug is much less toxic than the other forms of strophanthin in common use. As a result of his studies Vaquez believes that the action of ouabaine is essentially on the ventricular musculature. He recommends its use in socalled acute cardiac dilatation with edema of the lungs, as well as in patients with severe persistent myocardial insufficiency in whom digitalis has proved of no effect. In the latter condition he gives ouabaine in doses of one quarter milligram intravenously morning and evening for two days, rarely longer. Further chapters cover the general regulatory measures employed in the treatment of heart disease, the treatment of insufficiency of the right and left hearts, of the arrythmias, of hypertension and angina pectoris. The book is scholarly, well written and most fascinating reading. It is quite distinctive in its field and should prove of value and of interest to every physician.

DYSPNEA

Dyspnea. By James Howard Means. Medicine Monographs, Vol. V. Baltimore: Williams and Wilkins Company, 1924.

This monograph contains much valuable information concerning dyspnea. The subject is a difficult one to the average physician who has had no special training in physical chemistry, and unfortunately Dr. Means has made its comprehension more difficult by an involved and at times, it must be said, a careless style. In the first section of the book the various factors that may be concerned in the production of dyspnea are discussed. The subsequent sections are devoted to an explanation of the causes of dyspnea in various diseased states.

RADIOTHERAPY

Ergebnisse der medizinischen Strahlenbeforschung (Röntgendiagnostik, Röntgenotherapie, Radiumtherapie und Lichttherapie). Herausgegeben von H. Hohlfelder, Frankfurt a.M., H. Holthusen, Hamburg, O. Jüngling, Tübingen, H. Martius. Bonn a. Rh. Band I. Mit 451 Abbildungen im Text und 3 photographischen Tafeln. Leipzig: Verlag von Georg Thieme, 1925. Pp. x-748.

The medical investigations in the realm of irradiation have enormously widened the scope of this branch of therapy, and investigators all over the world, working in the most diverse directions, have added considerably to the sum total of knowledge in this branch of medicine. Röntgenotherapy and radium therapy have been applied in all branches of medicine, and as a result the literature is distributed throughout the various special medical books and journals. The physical side of the subject, heretofore, had to be sought in the different journals of physics and were more or less inaccessible to the physician and surgeon. On the other hand, the physician and surgeon found themselves confronted by questions which really required a physicist to solve. It is only recently that physicists have begun to busy themselves with questions of this sort. The answers to numerous biological questions, which are intimately associated with histology, physiology and experimental therapeutics, are also distributed throughout the entire field of medical literature.

In order to overcome these difficulties of wide distribution, the editors of this encyclopedic work have assigned special subjects to authorities in their

respective fields and endeavored to present a complete view of irradiation therapy. In this first volume A. W. Fischer writes about the problems and results of röntgenological diagnosis of malignant and inflammatory tumors of the colon. E. Friedl discusses the subject of bone atrophy. Acute miliary tuberculosis in the röntgenogram is the work of A. Lorey. Spectroscopy in medical röntgenology, by L. Grebe, and the measurement of ionization of x rays, by H. Küstner, are worked up from the physical aspect. R. Glocker describes the means of protection from x rays and the construction and planning of x ray departments. H. Holthusen writes about physical sensitization. R. Schinz and B. Slotopolsky describe their work on the röntgenized testicle. W. Lahm discusses the irradiation treatment of carcinoma of the cervix uteri. The röntgen and radium treatment of carcinoma of the esophagus is contributed by H. Kurtzahn.

The bibliography is very complete, as is also the index of authors, in both of which English and American works are well represented. The same may be said of the subject index. On the whole, the least that can be said of this work is that no one who is interested in the subject of irradiation therapy can well afford to be without it. It is the most complete and up to date work on the subject known to the reviewer.

DYSPEPSIA

Lectures on Dyspepsia. By Robert Hutchison, M.D., F.R.C.P., Physician to the London Hospital. London: Edward Arnold & Co., 1925. Pp. 176.

This little book consists of a series of lectures on dyspepsia intended for audiences of British general practitioners. The subjects covered in the thirteen chapters are the clinical investigation of dyspepsia, the significance of abdominal pain, conditions which simulate dyspepsia, the organic dyspepsias, gastroptosis, the functional dyspepsias, special symptoms and their treatment, chronic diarrhea, chronic constipation, and mucomembranous colitis.

The style, as in practically all English books, is clear and pleasing. The last chapter on The Chronic Abdomen, which is as pretty a piece of English writing as we have seen in medical literature, has been the subject of editorial comment in the *Journal of the American Medical Association* (June 16, 1923) and of an interesting letter in a subsequent issue of the same periodical (July 14, 1923).

HAND INFECTIONS

Infections of the Hand. By Allen B. Kanavel, M.D. Fifth Edition, Thoroughly Revised. Illustrated with 196 Engravings. Philadelphia and New York: Lea and Febiger, 1925. Pp. 487.

It seems unnecessary to review the fifth edition of Kanavel's work. No man has done more to diminish the deplorable after results in traumatic conditions of the hand than Kanavel. The economic value in industrial medicine of his book is inestimable. Kanavel originally brought before the profession in this country the anatomy of the hand; pathology of infection of the hand; and, with the knowledge derived therefrom, a logical treatment of infections.

The fifth edition has been thoroughly revised, and takes up first, the simple infections, and later, the anatomy of the spaces of the hand and the tendon sheaths, describing in detail the courses of infections as they follow anatomical planes. This work is comprehensive, well written and delightfully combined with case reports which bring into play concrete examples. Kanavel's ingenuity in the many mechanical devices for correcting deformities of the hand is admirable. Every surgeon should thoroughly study this work because of its tremendous economic importance. A laborer with a stiff hand or finger presents immediately a serious economic problem in a community. To criticise a work of this type would be foolish; to give it sufficient praise is almost impossible.

SURGERY

Modern Surgery, General and Operative. By J. Chalmers Da Costa, M.D., LL.D., F.A.C.S. Ninth Edition, Revised and Reset. With 1200 Illustrations, Some in Colors. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 15-27.

It is a great joy to welcome the ninth edition of Da Costa's *Surgery*. There is no single volume on surgery as thorough or as well arranged as Da Costa's. This new volume lives up to the standard set by its predecessors. Da Costa has the art of putting into a brief space a comprehensive description of a subject. Throughout the book there are numerous references to literature which will aid one to study monographs on the subjects described. The book is thoroughly up to date with adequate illustrations. The index alone must have been a colossal work as it occupies forty-two pages.

For the general practitioner, the student or the surgeon, the reviewer can recommend no finer one volume work on surgery.

MAYO CLINIC PAPERS

Collected Papers of the Mayo Clinic. Edited by Mrs. M. H. Mellish. Volume XVI, 1924. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1331.

This volume follows the practice initiated last year of including all the papers published from the Mayo Clinic, by either reprinting them in full, abstracting them or giving the titles only.

This year the miscellaneous group leads with forty-five titles. There then follow in order of amount of work represented, the alimentary tract with forty titles, the head, trunk and extremities with thirty-one, the blood and circulatory organs with twenty-four, the urogenital organs with twenty-three, skin and syphilis with seventeen, brain, spinal cord and nerves, and technic with fifteen each ,and the ductless glands with fourteen. As usual a complete bibliographic and author index still further enhances the value of this always useful volume.

THE COMMON COLD

Colds. Cause, Treatment and Prevention. By Russell L. Cecil, M.D. New York and London: D. Appleton and Company, 1925. Pp. viii-111.

Books couched in simple language, so as to be intelligible to the laity, are becoming increasingly popular and are a valuable means of educating the public in the matter of the conservation of health. This applies particularly to a book on colds—a practically universal ailment. The various types of colds and

their causes are discussed. The ordinary coryza is differentiated from hay fever and asthma, tonsillitis and adenoids, and grip and influenza. The complications of colds are also discussed. In the treatment and prevention of pneumonia, all the various forms of therapy from the old household remedies to the most recent chlorine treatment are mentioned. The reader is given reliable and comprehensive information in regard to the prevention and treatment of colds.

A SHORT HISTORY OF MEDICINE

Geschichtliche Entwicklung der Medizin in ihren Hauptperioden Dargestellt. Von Dr. Georg Honigmann. München: J. F. Lehmanns Verlag, 1925.

This brochure is not of the usual type of short history of medicine, but the author attempts to show the historical course of development of the ideas that run through medicine and their relation to the history of civilization. It is a sequel to his *Das Wesen der Heilkunde*. The author does not mention every prominent name in the history of medicine, especially of more recent time, but only shows the more important points of connection between the various periods of the development of medicine.

The different chapters are headed as follows: Primitive and Hellenic medicine, medical sects, Galen, and the medicine of the early Middle Ages; Arabian medicine and scholasticism; the Renaissance; the seventeenth, biological century; the eighteenth century; Romantic medicine in Germany; the beginnings of modern medicine; Virchow and cellular pathology; medicine in the age of materialism, and the development of the modern practice of medicine.

HANDBOOK FOR THE TUBERCULOUS

Recovery Record for Use in Tuberculosis. By Gerald B. Webb, M.D., and Charles T. Ryder, M.D.; Second Edition. New York: Paul B. Hoeber, 1925.

This is the second edition of an interesting book for tuberculous patients. The authors are both residents of Colorado and their personal as well as their general experience is of value in telling the patient how he can be helpful in his own case. The technic of recovery is comprehensively described so that any fairly intelligent patient can grasp the full meaning. Hygiene, diet, fresh air, food, the method of clothing are given so that the patient may make no mistake when he undertakes the cure. A number of chapters are devoted to a description of the kind of amusements the patient may indulge in. The meaning of symptoms, which the authors call accidents and obstacles, such as fever, sweating, hemorrhages, and colds, are described and how to avoid them explained.

The blank chart sheets, which make up the greater part of the book, are made interesting by quotations from well known tuberculosis authorities and classical authors. There are nearly one hundred record blanks on which the patient is to inscribe his daily temperatures, pulse, weight, and other items which he thinks might be of interest to the physician, or write questions he would like to have answered. Space would not permit to give the two quotations on each page although they are all interesting, educational, and even inspiring. Nevertheless, I may be permitted to quote a few particularly interesting ones. "I know I have hurt nobody by rest, but I am quite sure I often have by allowing them to exercise"—Trudeau. "To climb steep hills requires slow pace at first"—Shakespeare. "Even the father of medicine, Hippocrates, taught the value of fresh air" —Bowditch. "Too much food may prove as disastrous as too little food, it is a great pity to waste good food"—Lawrason Brown. "For tuberculosis we prescribe not medicine but a mode of life"—Bushnell. "It is in the power of man to cause all parasitic diseases to disappear from the world"—Pasteur. "I think we can see the beginning of the end of tuberculosis"—Miller. "This is a conflict which we may enter with a surely founded prospect of success"—Koch. The authors themselves give their final advice the words "Vive ut vivas" (Live so that you may live). It is to be hoped that these many interesting quotations, nearly all of them of an optimistic character, will suffice to counteract the inevitable harmful introspection which comes from the frequent counting of the pulse, taking the temperature, and watching the weight.

THE RECTOR OF WYCK

The Rector of Wyck. By May Sinclair. New York: The Macmillan Company, 1925. Pp. 258.

This short novel in Miss Sinclair's airier vein gives us another of her keen sidelights on life's ironies. Here is a girl of scintillant promise—she marries a country minister, such a nice fellow! Together in their uneventful country side they spend life—seemingly without results. As far as their dreams are concerned only one is left to them—their love of each other. Their children follow the more or less stereotyped rut of minister's children, not in this case because of severity in the home. There was none. Simply because nothing ever happens in that dead village. Two worthy people with whom fate deals most unworthily! Two selfless people who wear themselves out for others who would much prefer to be let alone.

Miss Sinclair is skillfully undermining age old precedent with the face of charming innocence. To some the *Rector of Wyck* will mercifully remain "a sweet story." Others it may tempt to thought concerning the pernicious "sweetness and light" ideals. Still others may with luck find inferences to draw about a few of the major hypocrisies of life, and ourselves as willing or unwilling victims.

A MYSTERY STORY

The Eames-Erskine Case. By A. Fielding. New York: Alfred A. Knopf, 1925. Pp. 244.

This is a mystery story of the standard double barrelled type. A young man is found murdered. It develops that he is the heir of a once famous house. He has been in Canada engaged in silk manufacture. He and his pal make discoveries that threaten to revolutionize the silk industry. The threads begin to weave back and forth with nothing as it appears to be. The difficult skein is at last unravelled to the satisfaction of all concerned (except the poor fellow murdered), the wicked suicide, in penance for years of vampiring, the good are rescued at the last, last gasp and consigned to the "happy ever after." An amusing tale, good enough for a desultory evening, and sufficiently full of subtle detail and mystery to confuse even a cross word puzzle fan.

Medicoliterary Notes.

"What would Abbas I, that mighty and terrible ruler of Persia some centuries ago, think of the modern world's annual consumption of cigarettes?" asks a recent issue of the *New York Times Magazine*. "It was Abbas who cut off the lips of those of his subjects who smoked and the noses of any who ventured to take snuff. Once he found a man selling tobacco and threw man and weed together into the fire. In 1610 Mohammed IV punished a citizen of Constantinople who, contrary to the royal edict, was discovered smoking by ordering a hole pierced through the cartilage of his nose and a pipe inserted into it. The offender was then seated on the back of an ass, with his face toward the tail, and driven through the streets of the city, while the town criers announced his crime and punishment. Czar Michael Fedorowitz of Russia not only had his subjects beaten publicly for smoking, but often went even further; and were this crime committed a second time, death was the penalty. . . .

"It is a long jump from his time to 1908, but in the latter year writers in this country were beginning to comment unfavorably on women smoking. One commentator of that date, referring to the "unlovely" list of feminine smokers, stated there were to be found on it names of many women of renown. He had been told the Empress of Austria smoked from thirty to forty cigarettes daily. The Dowager Empress of Russia was also addicted to the use of the weed, as well as the Queen of Rumania, the Queen Regent of Spain, the Queen of Italy, and the Queen of Portugal. The latter, however, came honestly by her smoking proclivities, her mother being a devotee of the weed.'

"Today the situation is startlingly altered, and critics of bygone times might discover themselves at a loss for words as they surveyed the modern inroads of tobacco. . . . Difficulty in securing even an eligible executioner would complicate the case."

* * *

Aesculape (Paris) for March, 1925, contains a number of articles of rather exceptional interest, with the usual excellent illustrations marking that publication. Among the articles are: *Le Cure de Syphilis en XVI ièmé Siécle*, Dr. E. Jeanselme; *La Lèpre en Catalogue au Temps Jadis et de Nos Jours*, by Dr. J. Sabrazès; *Lesb Femmes à Barbe*, by Dr. Laignel-Lavastine; *Les Lépreux en Bas-Limousin*, by Prof. Guiart and Dr. Jean Mazeyrie; *Nègres Blancs et Nègres Pies*, by Dr. Neveu-Lemaire; and *La Maladie de Job*, by Prof. J. Rollet.

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In Fridtjof Nansen's recently published book, *Hunting and Adventure in the Arctic*, quite a detailed description is given of the very distressing and heartless wholesale destruction of seals going on there. The author does not mince matters in commenting on the terrible cruelties practised, and their effects upon the natures of the seal catchers. He once asked a captain of a sealing vessel whether this wholesale slaughter would not exterminate the seals. "No, lad," replied the captain, "Providence created the seals for us to catch, and Providence will see to it that they don't grow scarce." Nansen makes another plea for the preservation of the whales, which are rapidly being extirpated. "We cannot even agree to spare them sufficiently to keep them in existence so that they may be of lasting certain utility to us. It seems as though human beings in their insatiable greed are wilfully blind."

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A strong prohibition movement is being staged in India, notably in Bombay, and its victory has been described as within measurable distance. The British press seems to consider the movement as of purely political origin, an outcome of the noncooperative program.

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The latest *Bulletin* of the Eugenics Record Office is one of unusual interest. It is a study of Body Build: Its Development and Inheritance, by C. B. Davenport, director of the department of genetics of the Carnegie Institution of Washington.

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The Grand Street Follies, third edition for 1925, at the Neighborhood playhouse is about the cleverest and most entertaining show of the kind that has appeared before the footlights of New York theatres this season. The acting has a freshness and individuality seldom seen on the professional stage, and most of the impersonations are excellently done. "They Knew What They Wanted Under the Elms" starts the ball rolling in a very clever and amusing way.

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It is reported in Prague that a large collection of Dostoievsky manuscripts has been found in the Caucasus. Included are said to be two unpublished works. The story is that the author himself deposited this material in safes in Moscow and Petrograd. When he died his widow went to live in the Caucasus, taking the keys with her. She, in turn, died without formally mentioning the manuscripts. . . . Recently they were found, the report goes, in an old box which had been placed in storage by a man, supposedly a stranger to the Dostoievsky family.—*New York Times.*

* * *

The recently issued Annual Report of the New York State Hospital Commission for 1923-1924 includes some interesting figures on results of treatment. The cases discharged from the civil state hospitals, exclusive of transfers, numbered 4,396. Of these 1,720 were discharged as recovered, 991 as much improved, 987 as improved, 618 as unimproved, and 80 as not insane. The total discharged benefited by treatment was 3,778.

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Late publications of interest to physicians are *The Taxonomy of Poison Ivy*, by James B. McNair (Field Museum of Natural History, Chicago); *The Adolescent Girl*, by Winifred Richmond (Macmillan); *Social Psychology*, by Knight Dunlap (Williams & Wilkins). Announcements for early fall include *Rejuvenation by Grafting*, by Dr. Serge Voronoff (Adelphi).

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The Hygienic Laboratory of the U. S. Public Health Service has issued the following *Bulletins:* The Use of Cooked Meat Medium for the Detection of C. Tetani; Studies on the Potency Testing of Pneumococcus Vaccines; The Adaptability of Various American Peptones for Use in Cholera Media, all three by Ida A. Bengston; Active Immunization of Monkeys Against Pneumococcus Pneumonia by Means of Intratracheal Injections of Pneumococcus Vaccine; Treatment of Experimental Pneumococcus Pneumonia in Monkeys with Pneumococcus Antibody Solution, both by Russell L. Cecil and Gustav I. Steffen: The Fate of Pneumococcus Protective Bodies When Injected into Normal Animals, by Dorothy R. Rhoades; The Protective Substance in Pneumococcus Pneumonia; The Use of Optochin Base in the Treatment of Lobar Pneumonia.

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After five years of legislative activity, the venereal control bill for the District of Columbia was signed by the President on February 26th. In spite of the fact that the bill had been on the verge of enactment at several times previously, it did not become a law until the closing days of the Sixty-eighth Congress, although every state in the Union had had some sort of venereal control measure since 1921.

* * *

The new headquarters of the British Medical Association shortly to be opened by the King occupies a site in Tavistock Square on which once stood Dickens' house before he moved to Gadshill. The actual site of the house is now covered by a sunken garden, but it is reported that the tree under which Dickens used to love to sit has been preserved. It has been proposed that a memorial be set up to mark the position of the house and record its significance as a literary landmark. It was Dickens' last permanent home in London.

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The New England Peabody Home for Crippled Children has recently issued an attractive report covering the years 1924-25, and describing and illustrating the work done there.

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The June issue of *Surgery, Gynecology and Obstetrics* is its twentieth anniversary number. In addition to the regular departments, there are articles by Dr. Franklin H. Martin of Chicago, on *Surgery, Gynecology, and Obstetrics*, Twenty Years Old; Dr. William J. Mayo, of Rochester, Minnesota, on Progress of Surgery in the Last Two Decades; and Sumner L. Koch, of Chicago, on Twenty Years of Surgery and an Index. In the department, The Surgeon's Library, is an especially interesting article on Lithotomy and the Lithotomists, by Dr. Alfred J. Brown, of Omaha, with two full page reproductions of old engravings.

Abstracts from Current Literature

CARDIOVASCULAR DISORDERS

Acute Coronary Obstruction.—Frederick A. Willius (*Medical Clinics of North America,* January, 1925) states that there is little to be done for this condition except to alleviate the patient's suffering as much as possible. The administration of morphine is probably the most effective for this purpose. In the author's experience the nitrites have given little or no benefit. The application of leeches to the precordium has been recommended. If the patient survives the severe cardiac insult, and there are manifestations of myocardial failure, the use of digitalis is indicated. The dose and method of administration must always be determined by the circumstances in the individual case. The presence of a pericardial friction rub due to localized pericarditis over the infarcted area is strong confirmatory evidence, but its absence is not significant. The rub is usually heard over the lower sternum, or just to the left of the sternum.

Premature contractions are frequently present, but their occurrence is not diagnostic. Most râles at the base of both lungs is a common finding. Fever, ranging from 99.6° to 103° and 104° F., is quite the rule, appearing a few hours after the accident. There is usually a definite leucocytosis, the count varying from 11,000 to 25,000. The electrocardiograph is helpful in substantiating acute coronary obstruction. The most constant findings in thirty-one reported cases were changes in the T wave, consisting of negative, diphasic and isoelectric deflections in Derivation I, in Derivations I and II, in Derivations II and III, and in Derivations I, II and III. In four cases, fusion of the R and T waves occurred, and in five instances aberration of the QRS complexes in all derivations were recorded.

Digitalis: Its Untoward Effects and Conditions Under Which It Either Fails to Act or Produces Unfavorable Results.—Henry K. Mohler (*Medical Clinics of North America,* November, 1924) states that the extraordinary difference in the results obtained from the use of digitalis often is difficult to explain. Different patients complaining of like symptoms and suffering from identical heart lesions respond to digitalis in a most variable manner.

The rapid heart rate, noted in neurocirculatory asthenia and in hyperthyroidism, not only is not benefited by digitalis administration, but accompanying symptoms are often aggravated. The tachycardia of hyperthyroidism is probably not benefited unless it is due to auricular fibrillation. The use of digitalis has not been of any uniform value in the treatment of paroxysmal tachycardia unless the duration of this disorder has inaugurated or aggravated a myocardial failure.

The heart failure seen in postoperative surgical infections, especially acute peritonitis, is seldom benefited by the administration of digitalis. The intravenous use of digitalis under these circumstances is especially dangerous because of the possibility of full doses producing the condition which is usually fatal, viz., ventricular fibrillation.

Patients who suffer from attacks of angina pectoris and who are treated with the usual doses of digitalis during the interval of the attacks, are often made worse.

In the form of cardiac irregularity known as sinus arrhythmia digitalis is without effect and may produce extrasystoles and more forcible action of the heart and even partial heartblock. Partial heartblock, a condition in which the ventricles fail to respond to every second, third, or fourth auricular contraction, may be converted into a complete block by the use of digitalis.

In auricular fibrillation digitalis may fail to produce a good result if the pulse rate be taken as the guide rather than the heart rate. Digitalis, if it is used in the treatment of this disorder, to be most effective must lower the heart to a range of sixty-five to seventy-five a minute. When the contractile power of the heart muscle is exhausted, digitalis may slow the pulse rate of auricular fibrillation to within normal range, but with no improvement in dyspnea, edema, and other accompanying symptoms. Cases of auricular fibrillation with heart failure and slow pulse rates are usually not benefited by the administration of digitalis.

Disappointment is often experienced in the intravenous use of digitalis in cases that appear to be heart failure. Sudden interference with the coronary circulation is accompanied by acute precordial pain and symptoms of heart failure. The use of digitalis under these circumstances is usually of no value and may produce ventricular fibrillation, a condition which is usually fatal and frequently present in preagonal states.

Digitalis fails to act or its action is delayed because the dose is too small or it is not absorbed. If considerable edema is present, absorption from the alimentary tract, when digitalis is given orally, and from edematous tissue when given subcutaneously, is very much delayed, and occasionally intravenous methods may be necessary to produce effects within several hours. When the symptoms are urgent the drug should be given so that the adult patient absorbs from four to eight c.c. of the tincture within twenty-four hours. In auricular fibrillation, if the digitalis is continued over too great a time or the doses are too large, "coupling of the beat" may be produced, and the patient complains of precordial distress, dyspnea, fulness in the head, and syncopal attacks or vertigo. The symptoms of digitalis poisoning are nausea, vomiting, diarrhea, headache, and dimness of vision.

Failure to obtain results from digitalis administration may result because poor preparations of digitalis are supplied. Tincture of digitalis, or the powdered digitalis leaves, physiologically assayed, have produced the best results by oral administration. For subcutaneous or intravenous injection suitable preparations of digitalis are manufactured, but one should be familiar with their action before too much reliance is placed upon them. Tincture of digitalis is more effective when administered not in combination with other drugs.

Digitalis will not act effectively in the presence of fever. The heart of diphtheria patients should be very carefully studied before digitalis is used, lest distressing symptoms may result. The cumulative effect of digitalis is probably not as great as it has been thought to be. The sudden disappearance of extensive edema, when digitalis has been taken over a long period of time, may result in the rapid absorption of the drug, producing symptoms of digitalis poisoning. Certain persons do not tolerate digitalis at times. This peculiar action may be explained by an idiosyncrasy for this drug.

Essential Hypertension.—Henry D. Jump (*Medical Clinics of North America,* November, 1924) describes essential hypertension as a disease in which blood pressure is increased and in which there is primarily no distinctive pathology or known cause. It is not generally recognized that hypertension may be the primary condition which will produce pathological changes in the vessels and kidneys. It is usually benign and subject to relief, but, on the other hand, consequences may follow rapidly and extensive damage occur.

The immediate cause of hypertension is probably a spasm of the smaller bloodvessels. The increased resistance calls for increased pressure in order to maintain the circulation correctly. The causes of this spasm must be various. An important factor is physical and mental strain, particularly the latter. Persistent overeating appears in some cases to be a positive factor. It is significant that persons with intestinal stasis frequently have increased pressure. Excessive use of tobacco appears to be a cause. It is still a debatable question how far alcohol may be considered as causing hypertension. The menopause has lately been thought a cause, and particularly when it is accompanied by obesity. The altered function of the ductless glands which accompany the menopause probably exert some influence upon blood pressure. Essential hypertension is a disease of middle life, though it is occasionally met with in the young.

Persistent increase in arterial tension may exist without any symptoms in the early stages. It may be discovered accidentally. Fatigability and vertigo are among the earliest symptoms; lack of initiative in mental and physical exertion are frequently noted. These symptoms seen in association with nervous instability may lead one to confuse the disorder with neurasthenia. Involvement of the heart leads to palpitation, irregularity, and dyspnea. The symptoms referable to the hardening of the bloodvessels vary with the location of the vessels involved. If of the abdomen, distention and other evidences of indigestion; if of the kidney,

the symptoms of contracted kidney—edema and urinary changes; if of the brain, symptoms of hemorrhage and thrombosis. In advanced hypertension headaches may be persistent and severe—the socalled "lead cap headaches." The sequelæ include hypertrophy of the heart and ultimately myocarditis, sclerosis of the bloodvessels and, secondarily, arteriosclerotic kidney.

Treatment depends upon an early discovery of the condition by routine physical examinations. An increase of twelve mm. above the average blood pressure appears to indicate the limit of normal excess. Reduction measures must be entered into guardedly and in association with removal o causes. Focal infections must be persistently sought for and removed. Strain and worry must be eliminated. A period of complete rest in bed on a milk diet will effect a very good reduction. Exercise should be indulged in to such an extent as the patient's condition permits. It should never be hurried. Foods which disagree with the patient must be avoided. Abstinence from proteins is helpful. A milk and vegetarian diet is best. Coffee, tea and alcohol should be avoided. Constipation should be eliminated. Colonic irrigations are helpful. An occasional mercurial purge is of advantage. Tobacco should be used sparingly or not at all. Obesity should be reduced moderately. Patients must not be so greatly reduced as to impair strength and vitality. Pilocarpine hydrochlorate in doses of one twentieth grain every three hours promotes diuresis; in larger doses up to one tenth grain it causes free sweating or free secretion of the gastrointestinal glands and kidneys. The bromide salts serve a very useful purpose in controlling excitement and apprehension. The vasodilators are occasionally indicated. Of these, potassium or sodium nitrite, in doses of one half to two grains every three hours, and erythroltetranitrite, in doses of one half to two grains every three hours, are the best.

Myocardial Infarction: An Electrocardiographic Study.—Frederick A. Willius, and Arlie R. Barnes (*Journal of Laboratory and Clinical Medicine,* March, 1925), describe nine cases of myocardial infarction from the Mayo Clinic, giving the electrocardiographic findings, and review twenty-four published cases. The most striking changes are those affecting the T wave; such abnormalities occurred in twenty-six of the thirty-one cases. In one instance the electrocardiogram was normal. The most frequent change found was the negativity of the T wave involving Derivation I, combined Derivations I and II, combined Derivations II and III, and combined Derivations I, II, and III. In three cases, the derivations involved varied during the period of observation; in four cases a tendency for fusion of the R and T wave occurred as a transient manifestation, quite closely resembling the findings of Pardee. Notching and broadening of the QRS complex involving all derivations occurred in only one instance in their own series. The other findings, delayed A-V conduction, sinoauricular block, ventricular tachycardia, nodal tachycardia and auricular flutter, occurred with such infrequency as to be unimportant. The frequency of T wave changes in myocardial infarction the authors believe to be significant, and these findings, in the presence of a suggestive clinical syndrome, will undoubtedly increase the frequency of a correct clinical diagnosis.

Importance of the Blood Pressure in the Progression of Glaucoma.—P. Baillart (*Médecine,* January, 1925) points out that the degree of excess of the intraocular tension is not the only factor bearing on the progression of glaucoma. The visual disturbance being due to compression of the retinal arteries on account of the increased intraocular tension, the lower the original pressure in these arteries the more pronounced will be the effects of the pressure exerted on them. A person with a normal pressure in the retinal arteries—about 30 mm. Hg, diastolic—will be seriously disturbed by a rise of intraocular tension to 45 mm. Hg, while a person with high blood pressure and consequently a high pressure in the retinal arteries will hardly at all be inconvenienced. As soon as the intraocular tension reaches the diastolic pressure in the retinal arteries, circulatory disturbance, with all its consequences, appears. It is not even necessary to determine directly the retinal arterial pressure to ascertain just where this zone of danger begins. Tests showed that the diastolic retinal arterial pressure is approximately one-half of the diastolic pressure in the brachial artery. Thus, whenever the intraocular tension reaches one half the latter pressure, there is risk of the retinal arterioles being forced shut during diastole, so that the circulation in the retina is insured only during systole. If the ratio of intraocular to arterial tension rises still further, the circulation is more and more disturbed, alike as regards the choroid circulation, which participates in regulation of the intraocular tension, and the retinal circulation. A time comes when the veins themselves are forced shut, the return circulation is arrested, and the resulting disturbance leads not only to loss of vision, but also to redness of the eyeball, edema of the humors and a fresh elevation of intraocular tension. It is a mistake to consider glaucoma as a complication of high blood pressure; many glaucoma cases have never had a high blood pressure, and acute attacks of it are seen even in persons with low blood pressure.

Value of Vital Capacity Charts in Diseases of the Heart, Lungs, and Mediastinum.—John H. Arnett (*Medical Clinics of North America,* November, 1924) states that in diseases of the heart, lungs, and mediastinum there may be a very marked reduction of the vital capacity, and that therefore this determination cannot be used to make a differential diagnosis between these three conditions; neither can it be used to diagnose the particular pathological processes which may involve the heart, lungs, or mediastinum.

Vital capacity standards, when applied to healthy individuals living under relatively uniform conditions, show variations of such frequency and degree that even the best standards must be regarded as an inaccurate estimation of the vital capacity which a healthy person should possess. Our vital capacity standards must be regarded as extremely rough and inaccurate means of estimating a person's normal vital capacity, and therefore we must admit that our present standards possess a very limited value in the diagnosis of diseases of the chest.

However, it is often valuable to have a rough estimation of what the vital capacity in a given case should be. For this purpose the author believes that a standard based upon height alone is more satisfactory than one based upon weight, either alone or combined with the height, as in West's surface area standard, for example. This is true because this surface area standard assumes a normal relationship between height and weight, which in many patients in a hospital ward does not exist. The weight throws a confusing element into the standard. Furthermore, since simplicity is always an important factor, it seems more rational to use a simple height formula, such as that recommended by Peabody and Wentworth, West, or Hewlett and Jackson. Be that as it may, the important thing to remember about vital capacity standards is their unreliability, unless applied only to the group from which they were derived.

Aside from the question of standards, however, the vital capacity possesses a definite value in following the course of patients with diseases of the chest; it offers likewise a method of studying their pathological physiology. Furthermore, by watching the vital capacity of our private patients from year to year, a sudden reduction, which cannot be otherwise accounted for, may perhaps be a valuable early indication of incipient pulmonary disease.

The Basal Metabolic Rate in Cases of Primary Cardiac Disease.—Walter M. Boothby and Frederick A. Willius (*Medical Clinics of North America,* January, 1925) report that in the routine determination of the metabolic rate in patients with cardiac disease, the level of the metabolism is found to be slightly elevated above the DuBois standards more frequently than in strictly normal subjects. This elevation is independent of electrocardiographic findings, and of the type, character or degree of the organic heart lesion. Patients, however, who present evidences of marked cardiac decompensation in the form of dyspnea or orthopnea occasionally have a definite increase in metabolism; in such cases the metabolism usually decreases as cardiac efficiency improves. However, the relative infrequency and irregularity of the increase in metabolism, with or without cyanosis, is against the assumption that the usual cause is the formation of lactic acid from incomplete oxidation, although in a case of extreme cyanosis this might occasionally play a slight part. In the authors' cases the most probable causes seem to be based on two factors: the actual increase in muscular work required in labored respiration, and, which is more important, a subjective sensation of distress, with resultant nervousness and fear, from the application of the mask. Consequently, it is often difficult to obtain sufficient coöperation from the patient, to assure complete mental and physical relaxation. Likewise, patients with hypertension and

a very high diastolic blood pressure are likely to have an elevation in the metabolism, apparently in most cases because they can less readily relax, although other unknown factors may play a part.

On account of the relative frequency of a slight elevation in the metabolic rate in patients with cardiac disease, due, as a rule, to the difficulty of establishing standard conditions, it behooves the physician to exercise great caution in interpreting the clinical significance of slight elevations in the metabolism in patients suffering from decompensated heart disease or essential hyperthyroidism.

On the other hand, in many cases of adenomatous goitre with hyperthyroidism, the correct diagnosis may be overlooked. A patient with an adenoma of the thyroid, especially if the tumor is quite small, must be considered as hyperthyroid, and the cardiac condition regarded as entirely or partly secondary thereto, provided the metabolism on repeated observations remains above normal.

Fate of the Bulbus Cordis in the Human Heart.—Arthur Keith (*Lancet,* December 20, 1924) adduces evidence which seems to him to demonstrate that the infundibulum of the right ventricle must be regarded as a distinct constituent of the heart, as evidenced by studies in comparative anatomy and embryology. A survey of the anatomy of the infundibulum shows that, although its cavity is now merged into that of the right ventricle, its limits can still be identified. The evidence which is still lacking relates to the exact function of this part of the heart. The evidence of comparative anatomy leads one to regard it as serving as a safety mechanism for the pulmonary circulation. In the mammalian heart the musculature of the infundibulum passes into action later than that of the body of the right ventricle. The author believes that future investigations will show that the infundibular chamber and its musculature only come into effective action during periods of great exertion and stress. At rest the right ventricle of a man pumps about three litres of blood into the lungs a minute, but in periods of stress, the output may rise to thirty litres a minute. In such conditions of cardiac stress the cavity of the infundibulum intervenes between the driving power of the right ventricle and the pulmonary circulation, and must, the author thinks, exercise a moderating influence.

Premature Heart Beats.—John Hay (*British Medical Journal,* October 18, 1924) classifies the more common cardiac irregularities into two groups: 1, Sinus arrhythmia, with a rise and fall in frequency associated with respirations, and the arrhythmia due to premature beats; 2, auricular fibrillation and pulsus alternans. Other things being equal, the prognosis in the first group may be good. The finding of premature beats indicates a careful physical examination, especially in advanced years. The prognosis depends upon the associated conditions. In the second group, much depends upon the amount of distress from the fibrillation; the condition of the myocardium may be judged thereby. Another guide is the ventricular rate—the greater the rapidity, the more grave the prognosis. An absence of response to digitalis is a grave omen, particularly if the fibrillations are superimposed upon a high blood pressure. It is very important to recognize the nature of the irregularity.

Cervical Sympathectomy in Angina Pectoris.—F. J. Smith and R. D. McClure (*Surgery, Gynecology and Obstetrics,* August, 1924) assert that while in many cases resection of the cervical sympathetic in angina pectoris, unilateral or bilateral, may greatly lessen the number and minimize the intensity of the painful attacks, it must not be counted on to secure complete relief from pain, unless the first thoracic ganglion is included in the resection. The resection should be done first on the side which has shown the greatest or most severe radiation of pain, and followed later by a similar operation on the other side, if complete relief is not obtained after the first one.

As has already been pointed out by Jonnesco, more favorable results may be expected in those persons in whom the painful attacks dominate the picture, while the cardiac compensation is good, than in the patients who give evidence of grave heart muscle damage or are already in a state of cardiac failure.

The main indications for operation are: 1. Frequent and severe attacks necessitating the giving up of occupation, and not yielding satisfactorily to medical measures. 2. A feeling on the part of the patient that the painful attacks provide an intolerable situation.

Cardiac Irregularities: Especially in Reference to Prognosis and Treatment.—T. Wardrop Griffith (*British Medical Journal,* October 18, 1924) calls attention to the fact that some cases of extrasystole appear to be unimportant, but they occur more often in persons with cardiac, valvular or muscular lesions and hypertension, that they often persist in spite of treatment, that they may be associated with severe distress, and that they may lead to a severe neurosis. In general, the prognosis depends more on the condition associated with the extrasystole than with the actual irregularity itself. In the absence of organic disease of the heart, open air pursuits may be followed and a reasonable amount of exercise taken. A light diet is indicated. Oral sepsis should be corrected. Coffee should be avoided and tobacco limited. Great benefit is said by some to result from small doses of quinidine, both in extrasystoles and in paroxysmal tachycardia. In paroxysmal tachycardia the symptoms may be alarming and even fatal. The various maneuvres recommended include firm pressure on the abdomen, and holding the breath after a full inspiration. The author has obtained some excellent results with hypodermic injections of morphine.

The prognosis of pulsus alternans is grave. A short period of pulsus alternans may follow premature systoles without any serious portent, but if it persists the outlook is serious. Intercalated extrasystoles, too weak to be detected at the wrist, may simulate this condition. It may also be found after the use of atropine. If these conditions can be eliminated, serious myocardial disease should be suspected.

Thyrocardiacs.—F. H. Lahey and B. E. Hamilton (*Surgery, Gynecology and Obstetrics,* July, 1924) note that the effect of prolonged thyroid intoxication upon certain individuals is to produce auricular fibrillation, and eventually true heart failure. In these cases even partial restoration of compensation may quite safely be followed by thyroid surgery, in properly selected stages. Subtotal thyroidectomy in such thyrocardiac cases relieves the failing heart of the burden that is making it fail and results in nearly all cases in complete relief of a complete disability. There is no comparable condition where persistent heart failure is consistently and safely cured by surgical measures.

This group of thyrocardiacs represents in a sense a new field for surgery, small but intensely fertile. It should stimulate everyone who has to deal with patients suffering from disability associated with heart failure, to consider carefully that an underlying hyperthyroidism is not overlooked.

Sensory Nerve Fibres of the Heart and Aorta in Relation to Surgical Operations for the Relief of Angina Pectoris.—J. N. Langley (*Lancet,* November 8, 1924) asserts that the cardiac afferent fibres existing in the sympathetic nerve can be severed without interfering with the innervation of the head, neck, or forelimbs by cutting the major and minor accelerator nerves (most of these are probably in the major nerve), but this would sever also the known sympathetic fibres both afferent and efferent of the head, lungs, and thoracic part of the esophagus. From an operative point of view the simplest procedure is to cut the nerves passing medially from the stellate ganglion, leaving intact the vertebral nerve and other rami communicantes. This, however, severs the sympathetic fibres to the head as well as those to the thorax. In the cat it is a very simple operation, and in those cases in which it has been performed it has not been found to have any fatal effect.

Points of Action of Phenobarbital and Sodium Phenobarbital in Lowering Blood Pressure.—Charles M. Gruber and Roy F. Baskett (*Journal of Laboratory and Clinical Medicine,* May, 1925), from experiments on dogs, cats, and rabbits, found that the usual effect of the intravenous injection of phenobarbital and sodium phenobarbital was to slow the heart rate; the heart's force was diminished and the heart itself dilated slightly when acted upon by sodium phenobarbital. There appears to be a greater depression of the cutaneous vessels than of the visceral vessels; the vessels of the limb dilate, while those of the intact intestine, kidney and spleen constrict. However, perfusion experiments show that the vessels of the kidney may also dilate and those of the limb may constrict. Sodium phenobarbital in moderate doses has no direct action upon the secretion of urine, although if given in large doses the resulting fall in blood pressure is capable of decreasing the urine secretion even to the point of causing anuria.

Direct Injection Into the Heart for Arrest of the Heart Beat During Anesthesia.—W. B. Howell (*Lancet,* October 11, 1924) states that when breathing stops during anesthesia, the first thing to do is to ascertain the condition of the heart, for no amount of artificial respiration will oxygenate blood which is not circulating. Time spent in giving hypodermic injections, hot applications, and other restorative measures is merely compromising the chances of recovery.

The actual injection is apparently harmless. At necropsies the damage from cardiac injections has been found to be *nil* as compared with that following cardiac massage. The needle should be inserted into the fourth intercostal space at the upper edge of the fifth rib, close to the sternal border, or else one finger's breadth inside the left border of relative heart dullness. By the first route, the right ventricle, and by the second, the left ventricle is reached. By either the internal mammary artery is avoided. The needle is known to be in one of the cavities of the heart by the escape of blood when the stylet is withdrawn. If the heart is much distended with blood it may be of advantage to let some of the blood escape. It would seem most rational to make the injection into the heart muscle itself. The injection can be conveniently made by means of a spinal puncture needle. Other substances than adrenalin have been used, but none has proved so satisfactory. The best method of artificial respiration is by means of the intratracheal insufflation of air. Sylvester's method has the drawback of hampering the heart by means of pressure on the lower thorax.

Relationship Between Calcification of Costal Cartilage and Bloodvessels (in Arteriosclerosis).—Charles A. Huyssen (*Schweizerische medizinische Wochenschrift,* October 31 and November 6, 1924) states that calcification of the costal cartilages, with the exception of the first on both sides, justify, in so far as they reach a certain extent, the assumption of a calcification of the internal bloodvessels (in the sense of arteriosclerosis). Calcification of the costal cartilages of lesser grade develop also as signs of senescence and as a result of disease conditions, which produce a protracted malnutrition of the body; with a coincident arteriosclerosis the calcification of cartilage is especially extensive in these cases. The grade of calcification of the costal cartilages must be judged differently according to the age and, especially, to the sex of the patient; it increases with age (even without vascular changes) and is usually considerably less extensive in females than in males. Coronary sclerosis in both sexes appears to show a generally more extensive calcification of costal cartilages than the average of the other forms of arteriosclerosis. In intermediate cases, with and without arteriosclerosis, occurring in patients of the same age and sex, the difference in the calcification of the costal cartilages in the röntgenogram of the isolated anterior chest wall can always be easily determined, but special attention must be paid to the calcifications in the sternal portion of the cartilages. If the röntgenologist can sufficiently demonstrate the calcification *in vivo,* the calcifications of the costal cartilages can aid in the diagnosis of arteriosclerosis after the normal values are determined.

Paroxysmal Tachycardia.—Frederick W. Price (*British Medical Journal,* October 18, 1924) classifies all cardiac irregularities as follows: 1, socalled sinus irregularity; 2, irregularity due to premature contraction (extrasystole); 3, irregularity due to heart block (sinoauricular, auriculoventricular, or intraventricular); 4, irregularity due to pulsus alternans; 5, irregularity due to auricular fibrillation; and 6, irregularity due to auricular flutter.

The author believes that the term paroxysmal tachycardia should be applied to marked acceleration of the cardiac rate, which commences suddenly without apparent cause, lasts for a varying period, ceases suddenly, and is due to an abnormal rhythm. The vast majority of such cases are the result of temporary auricular flutter with tachycardia, or temporary auricular fibrillation with tachycardia, and also paroxysms of extrasystoles. This condition should be suspected whenever an individual is conscious of a marked increase in the cardiac rate or attacks of palpitation occurring suddenly and without apparent cause, or suffers from dyspnea on exertion, and other indications of cardiac failure coming on rapidly. Some cases can only be diagnosed with the electrocardiograph.

The most important diagnostic factors are: the commencement and termination of the attack of tachycardia, characterized by the abruptness of the onset and termination, the reaching of the maximum rate within a few seconds; a persistent rate of over 160 and even of 140; the cardiac rate is not influenced by a change of posture or other forms of physical exertion. Recently the author has successfully employed five grains, after a preliminary dose of three grains to test for possible idiosyncrasy, of quinidine once daily, in the intervals between attacks, and to prevent their recurrence.

Microscopically Demonstrable Fat in Normal Human Heart Muscle.—A. M. Master (*Journal of Laboratory and Clinical Medicine,* May, 1925) found in a study of thirteen hearts from persons who had met sudden violent death by bullet, stab wounds, or other means, minute red droplets by the scharlach stain in the sarcoplasm of the cardiac muscle cells. These persons ranged from eight to fifty-six years of age. The socalled pigment of brown atrophy, supposedly an indication of senility of the muscle, was found in two healthy boys, eight and fifteen years old, respectively. The picture presented by the diffuse red droplets closely resembled the classical illustration that many of the textbooks on pathology use to depict fatty degeneration of the heart.

Notes on Acute Rheumatic Disease of the Heart.—William S. Thayer (*Bulletin of the Johns Hopkins Hospital,* February, 1925) presents a critical analysis of twenty-five cases of acute or subacute endocarditis coming to autopsy which appeared to be of indisputably pure rheumatic origin without demonstrable complicating bacterial septicemia. In twenty-one of these cases characteristic Aschoff bodies were found in the heart muscle. While the etiological element was not apparent, the sequence of the disease on ācute tonsillar or nasopharyngeal infection was striking. The onset was often associated with acute articular rheumatism or chorea. Thayer concludes from his analysis of these cases that the rheumatic origin of the manifestations of acute heart disease must naturally be regarded as probable when these are associated with polyarthritis or chorea. When, however, neither arthritis nor chorea is evident, a rheumatic carditis may be suspected from the youth of the patient, the history of previous arthritis or chorea, the evidences of tonsillitis, negative blood cultures, the frequency of serofibrinous pericarditis, relatively rare in acute and subacute bacterial endocarditis, the pronounced leucocytosis and the absence of petechiæ, or evidence of splenic enlargement, embolic phenomena or of blood in the urine. Especially significant, however, are electrocardiographic changes or the early onset of failure of the heart muscle, which reveal the presence of myocardial involvement, much more common in rheumatic disease than in other cardiac affections.

Acclimatization to High Altitudes.—J. S. Haldane (*British Medical Journal,* November 15, 1924) asserts that when we regard as a whole the phenomena of acclimatization to a low atmospheric pressure we see at once that when acclimatization is complete the organism is still in a physiologically different state from what it was before exposure to the low pressure. The breathing is greatly increased; the concentration of the blood in hemoglobin and red corpuscles is also increased, as well as the blood volume; the blood plasma is altered in composition; the blood forming bone marrow is increased; and if we could detect them we should probably find histological changes in the lung epithelium. All these changes, and probably many more which are not yet discovered, quite evidently centre around what may metaphorically be called an attempt to keep the oxygen pressure, and simultaneously the hydrogen ion concentration, about and within the living tissues constant. But the attempt is not completely successful: a slight deficiency in both oxygen pressure and hydrogen ion concentration remains over, and doubtless becomes more appreciable the greater the altitude. This deficiency is necessary as the stimulus for maintaining the state of adaptation. The primary stimulus is the deficiency in oxygen pressure, and the hydrogen ion deficiency is secondary to this. If we ask why the hydrogen ion deficiency at least should not be fully compensated, the probable answer is that this would involve such a loss of sodium, and perhaps potassium, as is resisted. Although from its very nature the process of acclimatization cannot be theoretically complete, yet it has the unmistakable effect of keeping the oxygen pressure within the body approximately constant without more than slight disturbance of other important factors in environment.

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Medicolegal Notes.

SUFFICIENCY OF INDICTMENT UNDER HARRISON ACT

Section 2 of the Harrison Act prohibits the sale of narcotics, except on written order of the purchaser on a prescribed form. Section 6 exempts sales of certain remedies when sold as medicine, and not for the purpose of evading the act. Section 8 provides that in indictments "it shall not be necessary to negative any of the aforesaid exemptions." In a prosecution against a registered druggist for selling paregoric containing two grains opium to the fluid ounce without a written order of the purchaser, the Circuit Court of Appeals, Fifth Circuit, held, Nelson v. United States, 298 Federal Reporter 93, that it was not necessary that the indictment negative that the paregoric was sold for medicinal purposes, and that it was for the defendant claiming exemption under section 6 to prove that he came within its provisions by showing that he had the written order required or that the preparation which he sold was intended by him to be used as medicine.

SUFFICIENCY OF CHARGE UNDER HARRISON ACT

The Circuit Court of Appeals, Seventh Circuit, holds, McIntosh v. United States, 1 Fed. (2nd) 427, that a charge, under a videlicet, under section 1 of the Harrison Act that defendant, without being registered, sold morphine sulphate, is supported by proof of a sale of morphine hydrochloride, there being no suggestion that the defendant was embarrassed in any way by the alleged variance, and the offense under the law being the same whether the defendant sold morphine sulphate or morphine hydrochloride.

REGISTRATION UNDER HARRISON ACT

The Circuit Court of Appeals, Eighth Circuit, holds, Weare v. United States, 1 Fed. (2nd) 617, that a person who sells or gives away opium or its derivatives, though only in a single instance, is a person who must register under section 1 of the Harrison Act, since the section does not say "carry on the business of" etc. Cases dealing with section 8, which relates to the possession of the drugs mentioned in the act, were held not in point in a case under section 1.

TUBERCULOSIS FROM INHALING GAS IN COKE PLANT HELD NOT AN ACCIDENT

The Virginia Supreme Court of Appeals holds Clinchfield Carbocoal Corp. v. Kiser, 124 S. E. 271, that an employee engaged in scraping out offtake pipes in a coke plant, through which pipes gas was discharged, and who was made sick by exposure to the gas, suffering nose bleeds and subsequently contracting tuberculosis, did not suffer injury from an accident within Virginia's Workmen's Compensation Act.

COMMENCEMENT OF MEDICAL TREATMENT PERIOD

The Indiana Appellate Court holds, Millspaugh & Irish Co. v. Lunte, 144 N. E. 147, that the legal rights of the employee and the corresponding duties of the employer, under section 25 of the Indiana Workmen's Compensation Act, providing for treatment, when necessary, for an additional period not exceeding thirty days after the first thirty day period, became enforceable when the injury has developed so that it may be diagnosed with reasonable certainty. Where the nature and extent of the injury, femoral hernia, was not ascertained until nearly a month after it occurred, it was held that the thirty day period during which the employer was liable for medical expense did not begin to run until that date.

SUNSTROKE TO TEAM DRIVER HELD COMPENSABLE

The Indiana Appellate Court holds, Townsend & Freeman Co. v. Taggart, 144 N. E. 556, that a sunstroke may be an accident within the Workmen's Compensation Act, and if the employment of a workman at the time he received a sunstroke was such as would expose him to a hazard beyond that of the general public then the disability resulting from the sunstroke will be regarded as due to an accident arising out of the employment. The driver of a team and wagon on a graveled highway on a very hot day was held to be exposed to a hazard beyond that of the general public and his disability resulting from a sunstroke was compensable as due to an accident arising out of his employment.

DEATH FROM INJURY RESULTING IN BLOOD POISON

The Iowa Supreme Court holds, Knowlton v. Preferred Accident Ins. Co., 199 N. W. 1014, that where an assured suffers an injury which results in blood poison, and the blood poison results in death, the proximate cause of death is the injury and not the blood poison.

ENTRAPMENT IN PRESCRIBING MORPHINE TO ADDICT DETECTIVE HELD NOT SHOWN

In a prosecution for furnishing morphine in violation of the Harrison Act it appeared that during nine months accused, a practicing physician, had given 108 morphine addicts a total of 4,095 prescriptions, calling for 79,592 grains of morphine. The Circuit Court of Appeals holds, Simmons v. United States, 300 Fed. 321, that, in view of the volume of the defendant's business of this type, the fact that the prescriptions on which conviction was had were given to an addict who was in the pay of the government and acting as a detective did not constitute the case one of forbidden entrapment. It was also held that the fact that defendant required his patients to bring a certificate from a health officer or some physician that they were afflicted with incurable disease, as required by the Tennessee statute, 1919, c. 105, and board of health regulations thereunder, did not constitute exculpatory good faith, the state law provision being in conflict with the Harrison Act.

PHYSICIANS DO NOT GUARANTEE SUCCESSFUL TREATMENT

The New Jersey Supreme Court holds, Grimaldi v. Heeglio, (decided June 15, 1925, not yet reported) that a patient cannot recover in an action for malpractice solely because the treatment given has been unsuccessful, but must show actual negligence by the defendant and that physicians are not guarantors of the success of their treatment unless they specifically make themselves such. The defendant in this case was a visiting physician at the Muhlenberg Hospital, Plainfield. The plaintiff was treated at the hospital under defendant's direction for a broken wrist. In some manner a wound upon the patient's arm became infected, resulting in suffering and the loss of use of the arm. The court, affirming judgment for the defendant, pointed out that infection may come from a variety of causes, and all a physician can do is to assist nature in throwing out the poison, and said: "It does not necessarily follow, however, that some one is responsible for this condition and must respond in damages for his suffering and reduced earning power. The skill and care that a physician is required to give his patient is that ordinarily possessed and exercised by others in his profession."

This decision is in accord with that by the same court in Smith v. Corrigan, 126 Atl. 680, noted in Medical Journal for June 17th, p. 796.

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Some Causes of Ageing

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What are the physiological processes which bring about the condition known to us as senility?

In recent years many physicians have emphasized the importance of the endocrine glands. Lorand and Horsley believed the thyroid gland to be an important factor. It is true that a lack of activity of the thyroid gland produces changes which are similar to those of old age. In cases of thyroid deficiencies, the skin becomes dry and wrinkled, the hair, eyelashes, eyebrows and beard thin. There is muscular weakness, sensitiveness to cold, and, as Brissaud says, "the entire body seems to be asleep." These changes are akin to those of senility, but this is no proof that the thyroid gland is a constant cause of senile changes. In fact, very often, in old age, we find a normal thyroid as well as other normal endocrine glands. We assume that normal senile changes affect the endocrine glands and that these disturbances are a result of old age rather than a cause of it. The importance of the gonads in relation to old age has been greatly exaggerated and there is no evidence to substantiate the use of gonad extracts and the opinions of the best medical minds are that these glands have little to do with the production of senility. Rejuvenation by means of gland transplantation has been generally discredited.

Metchnikoff maintained that old age was a result of toxemia, caused by syphilis, alcohol and bacteria in the colon. He believed that the putrefactive bacteria in the large intestines produced indol, skatol and phenol, which caused degenerative changes in the cells of the body. With sour milk and cultures of the Bacillus bulgaricus he hoped to check the process by destroying these bacteria. Sir Arbuthnot Lane (1) believed that chronic toxemia from the intestines was the cause of many senile degenerative changes. Undoubtedly, autointoxication from this source produces abnormal conditions.

Emile Demange (2) believed that senile changes were due "to a change in the quantity and quality of the interstitial nutritive material due to changes in the circulation, and this is due to atheroma and arteriosclerosis." He thought that, as a result of diminished calibre of the arteries, the nutrition to the parts was diminished. R. Thoma (3) wrote "the ceaseless activity of the heart and bloodvessels gradually weakens the elastic fibres of the vessels, as would happen in a piece of rubber which is expanded and contracted with ceaseless regularity. The loss of tone thus occasioned permits a dilatation of the vessels, the circulation is slackened partly through the dilatation and partly through the lessened contractility of the vessels and the nutrition of the organism is impaired."

Arteriosclerosis has long been looked upon as a cause of senility. However, arteriosclerosis in middle life due to lead poisoning or syphilis is not followed by changes characteristic of old age. There are many old people who do not have arteriosclerosis and it is safe to say that arterial sclerosis does not cause normal old age. According to Sir Humphrey Rolleston (4) arteriosclerosis is not constant in a considerable degree in old people and cannot be regarded as the cause of the degenerative changes in old age.

Ophülz (5) demonstrated that in many instances old age seemed to retard arteriosclerosis. Rolleston in commenting on Cazali's saying "man is as old as his arteries" says "the adventures of the man are a better index than the state of his arteries."

Much has been said about the results of increased blood pressure. It is a fact that arterial hypertension and arteriosclerosis may not necessarily coexist and we know of no reason why long continued high blood pressure should result in arteriosclerosis. We often find a generalized arteriosclerosis without a history of previous high blood pressure.

Essential hypertension is the term applied to high blood pressure without known cause. There are many people who have an increased blood pressure for years without accident and without resulting arterial changes or even kidney disease. Sir Clifford Allbutt (6) recognized the independence of the conditions and considered arteriosclerosis a degenerative process quite apart from hypertension. We cannot say that high blood pressure will cause kidney or heart disease because we have many examples of patients who never have these diseases. Moreover, we cannot say that a kidney disease is the cause of high blood pressure because so many patients suffering from Bright's disease never have high blood pressure. No doubt in many instances of long continued increased blood pressure, the kidneys and heart finally become affected; even in these cases we

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cannot infer that the condition is due to increased blood pressure because it is possible that the same factors which cause the kidney and heart disease produce arterial hypertension.

MacCallum (7) concludes that elevated blood pressure acting alone produces little or no change.

The causes of arterial hypertension and arteriosclerosis may be numerous. Syphilis, lead poisoning, infectious diseases, disorders of metabolism and focal infection are important factors.

The theory that high blood pressure is due to kidney disease and a result of increased force spent to drive the blood through the diseased organ, has been discredited. In searching for pressor substances which cause an abnormal contraction of arterioles, and which cause an arteriolar spasm, it has been found that there are few soluble pressor substances. They are protein in nature and may be bacterial, metabolic, cellular or intestinal in origin. Dale and Dixon described the pressor action of amines such as isoamylamine, p-hydroxyphenylethylamine and phenylamine which were the result of putrefaction of protein.

Major and Stephenson (8) possibly have thrown a light on a new phase of the study of essential hypertension. They have shown that at least one normal metabolite is a pressor substance. They found that urea, creatin, creatinine and uric acid are without effect on blood pressure, but that guanidin bases have a pressor action to a marked degree. Several of the guanidin bases have this pressor effect. Methyl guanidin and dimethyl guanidin are normal end products of protein metabolism. As pointed out in the *Journal of Laboratory and Clinical Medicine* (9) the guanidin bases produce the symptoms characteristic of essential hypertension, uremia and eclampsia.

Obesity does not necessarily cause increased blood pressure; many patients suffering from elevated blood pressure are thin. We may find many old patients with low blood pressure and children who have a high pressure. Overweight is not always due to overeating; it may be due to metabolic disturbances. However, some patients who have elevated blood pressure improve when their weight is reduced.

The suprarenal gland has been thought by many to be a cause of elevated blood pressure since adrenalin is said to bring about a similar change. There is nothing to substantiate this theory and while the thyroid and other glands may do harm in individual cases they are not to be looked upon as a cause of hypertension or arteriosclerosis.

Excitement and worry are probably important factors in the cause of increased blood pressure. Excessive protein food may have a great deal to do with the condition by causing protein putrefaction in the intestines. Tea, coffee, tobacco and alcohol probably have little to do with the production of elevated blood pressure or arteriosclerosis. The problems of blood pressure and arteriosclerosis are not yet solved.

For a long time it has been supposed that cancer was a disease of civilization, due to overeating, overdrinking, lack of vitamines and to intestinal toxemia. Other diseases such as Bright's disease might possibly have been included with cancer. E. M. Hudson (10) has shown that we have been in error regarding the mortality of cancer. He has made an exhaustive study of the statistics and concludes that cancer is not on the increase; that in three thousand five hundred years we have only reached a point where eighty-six persons in one hundred thousand suffer from this disease. The proportion is small and there is no reason to fear the increase of cancer. Hudson believes that cancer is not a disease of civilization. He shows that cancer is on the increase up to the age of puberty, when its mortality is highest; after that time it gradually diminishes until we reach the last years of life, that is old age, when the disease actually declines.

I. L. Nascher (11) discussing the causes of ageing, stated that, in his opinion, there may be a progressive evolution in cell life; that at one stage of this evolution the cells were most perfectly adapted to their surroundings and their available nutrition; that later, fewer and imperfect cells were formed, and that finally the cells were so imperfect and so poorly fitted for the conditions under which they existed, that they either did not reproduce or else the organs which they formed could not perform their functions. Nascher further states that the most important factor in the life of the cell is its nutrition, which is derived from the constituents of the blood. "Impairment of the blood, either through the presence of abnormal constitutents or some alteration in quantity or quality of the normal constituents, affects not only those cells which derive nutriment from those impaired constituents or assimilate the toxic material. These cells are weakened, their activities are impaired, and they reproduce defective cells."

Rolleston (12) probably presents the most plausible theory in his book, which has been referred to. He states that the process of ageing of the cells is just as much a part of their development or life cycle as are their earlier and progressive stages. He believes that there is a more or less definite cycle during which cells multiply and after which they cease to do so. "The atrophy or hypoplasia of the organs is due to diminution of the proliferation of the constituent cells. The cells of the complex organism depend for their duration of life not so much on an inborn store of vitality as on metabolic changes in the colloids which in their turn are modified or controlled by extrinsic factors of various kinds."

Carrel and Ebeling (13) point out that the serum of an adult animal restrains the proliferation in vitro of homologous fibroblasts and that its inhibitory power increases progressively as the age of the animal advances. It was evident that the action of serum on homologous fibroblasts was not due to one inhibiting substance only, but rather to the combined action of two substances, one activating and the other inhibitory. In further experiments (14) these scientists show that the growth inhibiting substances are always more pronounced than the activating substances. The activating substances are thermolabile and are probably of the same nature as the growth activating substances contained in embryonic tissue juice and leucocytic extracts or secretions and may be considered as a product of gland

and leucocytic activities. "It may be supposed, therefore, that the enhanced restraining action of serum in old age is caused by a decrease of the activating substances, or by an increase of the inhibiting substances, or by both." (Carrel and Ebeling). These authors conclude, under the conditions of their experiments, as follows:

"1. The inhibiting action on homologous fibroblasts of the heated serum of a young animal increases relatively more than that of an old animal. After it has been heated, the inhibiting action of the serum of the old animals is still greater than that of the young animal.

2. The CO_2 precipitate obtained from the serum of a young animal definitely increases the proliferative activity of homologous fibroblasts, while the CO_2 precipitates of the serum of an old animal has practically no activating power. After the removal of the CO_2 precipitate, the inhibiting action of the serum of young animals is increased, while that of old animals is not modified.

3. The increased inhibiting action of serum on homologous fibroblasts in old age is partly due to the disappearance of the growth activating substances and to the enhanced activity of the growth inhibiting principles."

Furthermore, Carrel and Ebeling (15) show that egg white mixed with egg yolk and bouillon are not utilized by fibroblasts for multiplication. This fact renders more plausible the hypothesis advanced previously that for proliferation the fibroblasts require some nitrogenous substances elaborated by other cells, which are present in embryonic tissue juices.

We doubt if we can ever discover means of greatly lengthening life. There are many factors at play in the production of premature senility, such as an abnormal mode of living, and the excitement and worry of modern life. Normal old age seems to be a mystery as far as its actual cause is concerned. There seems to be a law of Nature which brings about old age just as it brings birth in a given length of time and puberty at another. If Rolleston is right, there is a more or less definite cycle during which cells multiply and after which they cease to do so. It seems to be the best explanation we have of the cause of normal old age. As for the causes of abnormal old age, to repeat, numerous factors must be considered.

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114 East Fifty-fourth Street.

How Soon Should Nasal Deformities, Due to Abscess of the Septum, Be Corrected by Transplantation of Bone?

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In selecting a subject for a clinical paper I am frequently influenced by the communications which I receive from my confrères asking my opinion in regard to some particular case. These men, as a rule, are wideawake and well informed, and all are conscientious and solicitous in their attitude towards their patients. I reason that if men of such distinction need advice upon any subject, one cannot go far wrong in assuming that an open discussion of the points in question will serve a useful purpose by answering the unasked questions of many others. I trust that in trying to do this I may not add to the number of unwarranted communications which so clutter up medical literature.

Abscesses of the nasal septum are due to the introduction of pyogenic organisms between the layers of the mucoperichondrium. They are practically always due to traumatism, either accidental injury in which the nose may have been fractured, or infection may have followed some operation on the nose, usually the submucous operation for deflected septum. The number of deformities following the latter operation are occurring with increasing frequency and a note of warning should be sounded and surgeons should be urged to improve their technic and increase their precautions against infection.

All of the deformities following the submucous operation, however, are by no means due to infection; many are due to lack of skill on the part of the operator, or defective technic. Here the upper edge of the septum, or keystone of the nasal arch, is displaced from its normal position between the lateral cartilages and the nasal arch becomes established on a lower plane, constituting a saddleback deformity. In these cases the deformity is noted immediately after the operation. When this accident occurs the operator should anticipate the development of a deformity and should insert a bone transplant from the rib immediately. It is futile for the surgeon to try to undo the mischief by inserting pieces of car-

Fig. 1 Fig. 2 Fig. 3 Fig. 4

Figs. 1 and 2.—Deformity due to abscess of the septum following traumatic injury to the nose in early life.
Figs 3 and 4.—After correction of deformity by transplantation of bone and cartilage.

tilage removed from the septum, for these will have no fixed support and will gravitate into the submucous sac and deformity will result. What is indispensable here is a rafter of bone fixed to the frontal bone at the nasal spine and extending down under the soft tissues of the dorsum of the nose. It is unnecessary to say that the above situation should be carefully differentiated from abscess of the septum.

Abscess of the septum presents features peculiar to this locality, and these peculiarities should be kept well in mind by the rhinologist who treats the condition and by the plastic surgeon who corrects the deformity which always follows. The pus may burrow beneath the mucoperichondrium to such an extent that the latter is dissected on both sides from the entire septum.

A large abscess will frequently reach from the cribriform plate to the base of the vomer. In these cases the pus has been in contact for some time with the bone and cartilage of the septum and destruction of both of these tissues is more or less complete. Dead cartilage, as a rule, disappears gradually under a process of molecular disintegration; while the dead bone is cast off as a sequestrum. Now the sac between the two layers of the mucoperichondrium is quite a commodious pouch, and when it is infected and filled with dead bone and cartilage, some time must elapse, even under the most approved treatment, before its surgical cleanliness can be assured, and bone transplantation for the correction of the deformity cannot be considered under any other circumstances, otherwise failure is absolutely certain to follow.

Undoubtedly live bacteria lie dormant in tissues surrounding the old abscess cavity for a considerable period of time and we must be reasonably certain that these are no longer present before operating, for the transplantation of bone and cartilage, which is recognized as the only means by which these deformities can be satisfactorily corrected, is an operation of extreme delicacy and all factors bearing upon its successful conclusion should be carefully considered.

The patient's general health should be good. A Wassermann test should always be made; this is very important, for the saddleback nose is one of the characteristic manifestations of tertiary syphilis, and the testimony of patients upon this subject is notoriously unreliable and should be checked up by the scientific test. A Wassermann positive patient is not a good subject for bone transplantation under ordinary circumstances, and should always be subjected to a thorough course of treatment before operation.

As is very well known, there are some syphilitic patients who cannot be made Wassermann negative, even though the most approved treatment is continued over a long period. Several of these cases have come under my observation and because of impelling circumstances have insisted upon having the deformity corrected by bone transplantation. In all such cases I have placed the burden of responsibility for the success of the operation upon the patient. Most of these patients were plus two after prolonged treatment, and much to my surprise and gratification the results have been excellent, the transplant behaving exactly as in a successful nonspecific implantation.

A minimum of six weeks should be allowed to elapse following an abscess of the septum before an attempt should be made to correct the deformity by bone and cartilage transplantation. There may be indications for waiting much longer and they should always be obeyed. There is a considerable advantage in operating before cicatricial contraction following the abscess has reached its maximum. There is a phase in every case where the infection has disappeared and the cicatricial contraction has not progressed very far, which, if we knew how to detect it, would be the ideal time to operate; this, however, cannot be predicted with certainty, and we must err on the safe side and always give the patient an ample margin of time to recover from the abscess infection.

In the deformities following abscess of the septum, bone and cartilage transplants, introduced from within the nose in the manner originally described by me, afford an ideal means for restoring the symmetry of the organ. There is no scar, and when conjoined bone and cartilage are used, the transplant being taken at the junction of the rib with the costal cartilage, as originally suggested by me several years ago, not only is the resiliency of the nasal tip preserved, but the normal anatomical relations of the nose are restored.

The correction of the deformity is permanent, and noses restored in this manner resist traumatism as well as before the injury occurred.

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Postoperative Parotitis

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While comparatively rare, the occurrence of parotitis as a postoperative complication may be fraught with much danger to the patient. It is therefore surprising to note how little attention the condition has received in the literature. Sporadic reports of cases have been made from time to time since the development of modern abdominal surgery. As far back as 1886 Stephen Paget (1 and 2) called attention to the importance of the complication, which he associated more particularly with gynecological surgery. This was not unnatural, for two reasons. In the first place it had long been known that epidemic parotitis or mumps was occasionally associated with metastases to the ovary. When parotid inflammation occurred following operations upon the pelvic organs, it was not unnatural to suspect that one was dealing with a reflex or sympathetic process emanating from the ovary. Secondly, it must be remembered that a large proportion of the operations performed in the early days of abdominal surgery were of a gynecological nature, so that it was not surprising that the possibility of an ovarian causation loomed large in Paget's mind. It need scarcely be said that no evidence can be advanced to support such a theory as Paget's, and indeed, it can be at once disproved by the now well known fact that parotitis is often seen after operations not in any way dealing with the pelvic organs. For that matter, many cases have been observed in males.

Our incentive for the present brief paper was furnished by the study of three cases of postoperative parotitis which appeared to illustrate rather well the types commonly recognized, particularly from the standpoint of prognostic significance.

CASE HISTORIES

Case I.—Mrs. I. U., aged twenty-three, was operated upon April 14, 1923, for chronic pelvic inflammatory disease and chronic appendicitis. Her general condition was excellent. Recovery was satisfactory, except for a slight stitch infection. On the tenth day there appeared a considerable swelling of the left parotid gland, with some tenderness and slight fever (99.5°). The swelling became quite marked, and there was some increase in the fever, up to 101°. The gland was incised, but no pus was obtained, and the swelling gradually receded, being entirely gone in about two weeks after its appearance.

Case II.—Mrs. J. S., aged thirty-eight, was operated upon August 27, 1921, for gallstones and chronic appendicitis, the operation consisting of cholecystectomy and appendectomy. On the fifth day the left parotid gland, and two days later the right, began to swell. There was a gradual increase in both the swelling and the discomfort, and the fever ranged between 100° and 103°. Fluctuation developed within a few days and both sides were incised and drained. The discharge persisted for many days, and the swelling and induration diminished very slowly, the entire process requiring at least three weeks.

Case III.—Mrs. H. J., aged forty-nine, had suffered from severe digestive disturbance for several years and for two years there had been persistent vomiting. The patient had become extremely emaciated and weak. She had lost all her teeth and the mouth was quite dry. A definite mass could be felt in the epigastrium and the x ray confirmed the clinical impression of advanced cancer, with obstruction of the pylorus. A palliative gastroenterostomy was considered advisable, and was performed on October 28, 1924, the operation being a comparatively easy one. The patient's condition was relatively good for about seven days and the vomiting ceased entirely. Mouth washes had been used and much fluid given by both mouth and rectum. On the seventh day a swelling of the right parotid gland was noted, and this increased quite rapidly. The left gland became enlarged a few days after the right, and soon the enlargement became huge, especially because of the surrounding cellulitis, extending far down the neck. At this time the region above the neck was like a truncated pyramid, with the base at the shoulders.

The patient became more and more septic, in spite of the fact that both sides had been freely incised and drained. A moderate amount of pus was obtained at the first incision and the drainage continued very freely. Cultures of the pus showed staphylococcus aureus. Great sloughs were brought away through the wound. On one occasion, when I entered the patient's room as she was being dressed, I thought a sponge was being drawn out of the wound, so large was the sloughing mass being removed. In spite of the usual supportive and eliminating treatment, the patient became more and more septic and debilitated, and death took place on November 18, 1921, twenty-one days after the operation, and fourteen days after the appearance of the parotitis.

ETIOLOGY.

Although Paget's theory, mentioned above, is generally abandoned, there is no unanimity of opinion as yet concerning the cause of this complication. It may follow any form of abdominal operation. Some believe it to be most common after operations upon the gastrointestinal canal, and especially for cancer of the stomach. Others, again, state that it is more frequently noted following pelvic operations. There are some who believe that the most important predisposing factor is a bruising of the parotid gland by roughness on the part of the anesthetist. While such injury to the gland tissue, if it actually does occur, might well lower its resistance, this factor can scarcely be of importance in the immediate cause of the condition. Other theories have from time to time been suggested, such as that of Dyball (3) (1904), to the effect that the development of the parotitis is due to the selective action upon the gland of some unknown toxin which is liberated during operation. This theory is of course purely speculative.

The two explanations which alone seem worthy

of serious consideration are, first, that the parotitis is due to a hematogenous infection, second, that it is due to infection ascending along Stenson's duct. Theoretically, the first mentioned route for infection appears to be a plausible one, and certainly the actual one in cases of the pyemic type, where there is a general dissemination of pus foci. However, this is not the common clinical picture encountered, for often the general condition is good and there is rarely any evidence of metastatic abscesses in other tissues. Furthermore, a hematogenous infection would be more likely to be a localized one, rather than the diffuse process so commonly seen. Finally, rare as pathological studies have been, it appears to have been shown that the usual form of the lesion is characterized by periductal rather than perivascular infiltration, (4) thus again arguing against the hematogenous mechanism.

By far the most plausible explanation of the cause of postoperative parotitis is that which appears to have been first suggested by Bunts (5) in 1904. He observed that the complication was most common in patients who had poor teeth, gingivitis or other oral infections, and insalivation. Excessive dryness of the mouth is common after general anesthesia, and especially in those cases where atropine has been administered beforehand. Postoperatively great dryness of the mouth and poor oral hygiene are also noted in patients in whom fluids and nonmoistened foods are given by rectum instead of by mouth, as after certain stomach operations.

Infection of Stenson's duct is especially apt to occur if the secretion of the parotid gland is greatly diminished, especially where other predisposing oral conditions are present. Inflammatory occlusion of the duct may occur, facilitating the extension of the infection into the substance of the gland. Hyperemia, with edema, soon occurs, with rapid involvement of the whole gland, often continuing to suppuration, with perhaps extensive sloughing. Without going into details, it may be stated that such an explanation fits in better with known facts as to incidence, symptomatology and physical findings better than any other. When we speak of infection along Stenson's duct we must bear in mind the possibility that this is transmitted along the lymphatics rather than by direct extension along the mucosa. The exact mechanism is of course not known.

There has been some discussion as to why the parotid gland is involved in preference to the submaxillary and sublingual. Low (6) has explained this as due to the fact that the mucin containing secretions of the submaxillary and sublingual glands are strongly bactericidal, while the serous parotid secretion is not. Furthermore, the openings of the submaxillary and sublingual ducts are within the alveolar border, covered by the tongue and kept clean by the movements of the latter. Stenson's duct, on the other hand, opens outside the alveolar border and is in intimate relation with the molar teeth, which are more often carious than any others.

CLINICAL FEATURES.

Various types of acute postoperative nonepidemic parotitis have been described, but there seems to be no advantage in recognizing more than two, viz., the nonsuppurative and the suppurative. The first of these is less frequent than the second, and also very much less serious. It makes itself evident usually on from the third to the eighth day after operation. Pain and swelling appear over one or the other parotid gland, and there is usually only a moderate fever. The swelling gradually increases and may become very great, giving a picture much like that of mumps, especially when the gland of the opposite side becomes involved, as not infrequently occurs within a few days. The skin over the affected glands may become red and tense, but fluctuation is absent. The general condition of the patient is usually quite good, although there is apt to be considerable local discomfort, especially difficulty in swallowing. Within a few days the swelling begins to abate, the fever to diminish, and the patient's discomfort to lessen. Some induration may, however, persist for a good many days.

The suppurative type presents a very different picture. It may be noted in patients whose preoperative condition had been excellent. In these the onset is similar to that of the nonsuppurative type, though usually more severe, and perhaps accompanied by a chill. After a few days the swelling may become enormous, the fever high, the skin red, shiny and edematous, while the leucocytosis is apt to be quite high. The lesion may remain unilateral or may become bilateral. Fluctuation may appear, but the decision to incise should not be deferred for this, as the pus may be deeply seated beneath the dense parotid fascia, so that fluctuation may not be noted until very late or perhaps not at all. The constitutional symptoms may become severe, with septic fever, rapid pulse, and pronounced prostration.

If, as is unfortunately often the case, the preoperative condition of the patient was poor, as in Case III, the picture is a far graver one. Especially does this seem to be true in the cancer cachexias, for, as we have seen, the complication is perhaps most common after operations for stomach cancer. The patient in such cases soon becomes profoundly septic, the pulse becoming more and more rapid and of poorer quality, while the fever shows the usual septicemic fluctuation. Great as is the swelling of the gland, it appears even larger because of the surrounding cellulitis, involving a great portion of the neck. In extreme cases the patient's head forms the top of a pyramid, with its broad base at or just above the shoulders. Incision does not always halt the process. When the resistance is low and the injection relatively virulent, the entire gland may slough, and the cellulitis apparently spread, with no sign of regenerative activity. The patient may be overwhelmed within a comparatively short time, but more commonly lingers along for a good many days before succumbing.

PROGNOSIS.

Speaking generally, the mortality of this complication has been put at about thirty per cent. From what has been said, however, it is evident that the prognosis is dependent very largely upon the previous condition of the patient, as well as the intensity of the process. Since the latter is no doubt largely dependent upon the patient's resistance, it will be seen that, after all, it is this personal factor of the patient's previous condition which is most important

in determining the result. Death is uncommon when the patient's general condition has been excellent, while, on the other hand, it is generally to be expected in the violent suppurating and sloughing types, occurring in debilitated and perhaps cachectic individuals.

PREVENTION AND TREATMENT.

From what has been said of the etiology, certain measures looking to the prevention of parotitis would seem rational. Unfortunately the complication is not sufficiently frequent to call forth constant routine prophylactic vigilance. It would seem wise, however, to enforce oral hygiene in all patients upon whom abdominal operations are to be performed, especially if the patient's general condition is very poor. Cleansing of the teeth and the use of antiseptic mouth washes are of course important. After operation, in addition to such measures, it would seem important to prevent excessive dryness of the mouth. Plenty of fluids are to be given if there is no contraindication. The use of chewing gum has been advocated to keep up a free flow of saliva.

If pus forms, or if its presence is suspected, the gland should be incised. As already stated, the surgeon should not wait for fluctuation. Multiple incisions may be necessary over suspiciously soft or prominent areas. Through the incision, if pus is not encountered, one may explore the gland in various directions with a forceps. The usual precautions so necessary in operations on the parotid region should of course be observed, and need not be discussed here.

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Priapism: The Report of a Case of Forty-Five Days' Duration, Due to a Lesion of the Conus*

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Priapism is a pathological, persistent erection of the penis, not accompanied by sexual desire and usually painful. It does not often respond to medication and yet may subside spontaneously.

Hinman (1) could find 170 cases reported up to 1914. He found it simple and practical to classify cases of priapism in two groups,—those due to nervous causes and those due to local mechanical conditions. In the 170 recorded cases there were thirty-five due to lesions of the nervous system. Five cases secondary to nasal polyps were cured with one exception by their removal.

The duration of the attacks varied from two days to two years. Over sixty-five per cent. of the cases attributed to mechanical causes lasted from twenty to sixty days. Eighty-five per cent. of the nervous cases lasted less than ten days although early death occurred in fifty per cent. of them.

The character of the erection was stated in sixty-three of the histories and in forty-three of them (seventy per cent.) the corpora cavernosa alone were involved; thirty-eight of these cases were in the mechanical group. In ten nervous cases the whole penis was involved, while in only ten of the cases due to mechanical conditions was a complete erection observed.

Pain was always present. Sexual desire was lost in 107 cases and in three cases of the nervous group a temporary increased desire was noted. The following report is of interest:

*From the Department of Neurology of the School of Medicine of the University of Pennsylvania.

Case.—A colored man thirty-nine years old, a harnessmaker with a negative family history, came to us complaining of a persistent erection of his penis. He had gonorrhea at the age of twenty and gonorrhea and a chancre at twenty-one. He always used tobacco and alcohol to excess. He served in the United States Army for fourteen years, two of them being in the Philippines. When he was in the army he had an erection while he was in the saddle; the erection persisted as long as he remained mounted but subsided as soon as he dismounted. One year ago he had an erection of twelve hours' duration; he was sexually excited at the time, but failed to have his desires satisfied. During this attack a physician applied local medication and gave him pills. Four months ago he had a third attack of priapism which also lasted twelve hours. In the last two attacks the erections were not painful but were associated with a slight burning sensation in the rectum.

Present illness.—The man awoke on October 20, 1923, at 2:00 a. m. with an erection; this being a rather common occurrence, he paid no particular attention to it, turned over and went to sleep. The erection persisted the next day and that night he tried with three different women to cause a return of the penis to its resting state but his continued efforts were without the consummation he desired. He succeeded in having ejaculations although they were not associated with the ordinary pleasurable feelings. As the days went on without relief he sought the advice of two physicians and finally consulted an osteopath. The physicians did no good.

The osteopath made things worse by his manipulation of the vertebræ and penis. The patient stated that he had been able to void a normal amount of urine and he complained of a severe burning pain in the rectum.

Examination.—The facies were anxious but no evidence of acute pain was present. The penis was in a state of persistent erection, both the corpora cavernosa and corpus spongiosum were involved. The urethra, prostate and seminal vesicles were normal. Some difficulty in voiding was present but the bladder could be completely emptied and a catheter was passed without difficulty. Pupils, cranial nerves, nose and throat and muscular power in all extremities were normal. All the deep reflexes were present and active but the right patellar and achilles reflexes were not nearly so active as the left. Abdominal, cremasteric and plantar reflexes were normal. Prostatic smear, blood, urine, spinal fluid and x ray of the vertebral column were normal.

Clinical course and outcome.—On the thirty-first day of the priapism the man was given spinal anesthesia which was successful as far as the anesthesia was concerned but it had no effect on the erection. On the thirty-fifth day at the Naval Hospital, League Island, Philadelphia, the man was etherized and this produced no effect on the priapism. An incision was then made through the skin at the right lateral margin near the base of the penis and was continued through the corpus cavernosum, septum and into the left corpus. A considerable amount of dark blood and several small clots were evacuated; this had no effect on the state of the penis. Two days later under ether a second incision was made at the left lateral margin opposite that made previously and rubber tissue drainage was inserted through the wounds. Five days after the second operation the penis was semiflaccid distal to the incision but was spastic proximally. The erection slowly subsided so that at the end of forty-five days it approached the normal although it was not entirely flaccid. One year later the penis was flaccid and sexual desire and power had not returned.

Comment.—The case which we have cited above probably falls into the group of nervous cases although the evidence to back up this assertion might be considered flimsy. The man had distinct irregularity of the patellar and achilles reflexes, both of these reflexes being greater on the left side. This would mean a lesion, probably meningitic, extending from the second lumbar to the third sacral segments on the right side. It is well known that early in such conditions (which are usually syphilitic) satyriasis may occur and also persistent erections without sexual desire. In such a case persistent erection due originally to a nervous origin might later be converted into one dependent upon a mechanical state.

It is known that the centres in the spinal cord governing erection are localized in the conus although L. R. Muller (2) believes that the centres for erection are not in the cord at all but are in the sympathetic ganglia of the pelvis. The centres for ejaculation are separate and distinct and above those for erection.

We have recently seen a clear cut example that the centres for ejaculation and erection are separate. A man who received a severe injury to the lower part of his spinal cord developed a flaccid, crural paraplegia, loss of control of the sphincters and loss of sexual power. He gradually recovered, in order, power in the lower extremities, control of the bowels and bladder and then the power of erection, but it was some weeks before he was able to bring about an ejaculation.

In the case which we have reported we believe that there was present a localized meningomyelitic affection of the lower part of the spinal cord involving the reflex arcs of the right patellar and achilles reflexes and going a little lower and involving the centres for erection. After a time the nervous cause for erection was perpetuated by a mechanical disturbance. This was relieved by operation and the penis returned to a quiet state.

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Tonsillectomy in Rural Practice

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It is the prevailing opinion today, especially among specialists in diseases of the throat, that tonsillectomy is a major operation and should only be done in a hospital under ideal conditions. This idea is also instilled in the minds of many rural practitioners. The result is that many diseased tonsils in both adults and children living in rural districts never come to operation. The time, and more especially the money, are not available for their hospitalization. Distance from the medical centres and the specialists is too great. The ultimate outcome is evident. These same patients later present themselves complaining of vague muscular and joint pains, occasionally with acutely swollen and tender joints, general malaise, and shortness of breath on slight exertion, the victims of the end results of a long standing focus of infection.

There is no question that the same fundamental principles of asepsis and care should form the basis of tonsil operations as of any other surgical procedure. Yet it is evident that the technic can be so simplified as to permit its being carried out in the home or in the office of the rural physician, with as satisfactory results as are obtained in the hospital—thus bringing this service within the reach of many who need it.

This review is of one hundred consecutive tonsil operations taken from rural practice, covering a

Fig. 1.—Diagrammatic representation of the throat, showing points 1, 2, and 3, for the infiltration of novocaine solution. The position of the tongue depressor is also illustrated.

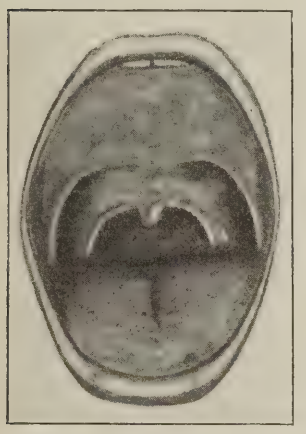

Fig. 2.—Tonsillectomy in a child, under general anesthesia, one and one half years after operation.

period of two years. It includes both children and adults, varying in age from two and one half years to fifty-four years. The children, sixty-six in number, were operated upon under general ether anesthesia; the adults, thirty-four in number, under local anesthesia. An arbitrary age of fifteen years was taken as the dividing line between children and adults. All operations were performed outside of a hospital and with the assistance of only one other person. Not one case terminated fatally. All were without complications except one, in a child, in which pleurisy developed on the third day following general anesthesia, lasting one week and terminating in complete recovery.

All cases were of the chronic hypertrophic type, both the fibrous and lymphoid variety. Many of the tonsils were enormously enlarged, touching in the midline, cryptic, and filled with a cheesy material; others so necrotic that only a shell remained. Some were situated very superficially, others deeply imbedded. The first group, when removed, left a shallow fossa, the latter, large well defined pillars. Those cases giving a long history of repeated attacks of tonsillitis presented a very fibrous tonsil, firmly adherent to the anterior and posterior pillars offering difficulty in dissection. Adenoid hypertrophy in the nasopharynx was found in the majority of the cases in children. Some were reoperative cases, the tonsil having first been removed when the patient was a child, the recurring tonsil becoming diseased and causing symptoms in a similar manner to the original tonsil.

Careful histories were taken of the cases, with special reference to any pathological condition in the chest and any tendency to abnormal bleeding. This was checked up with physical examination and coagulation time, using the simple glass slide method. A coagulation time of over ten minutes was considered abnormal. Existing colds, bronchitis, and other disorders of the respiratory organs, were treated for a short period, if necessary. Care was taken not to operate in a case during any phase of the acute stage of an attack of tonsillitis.

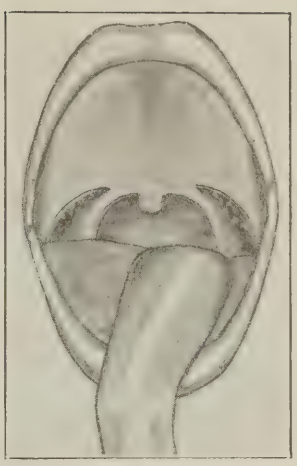

Fig. 3.—Tonsillectomy in a child five years old, one week after operation, showing slight amount of exudate in superior part of fossa.

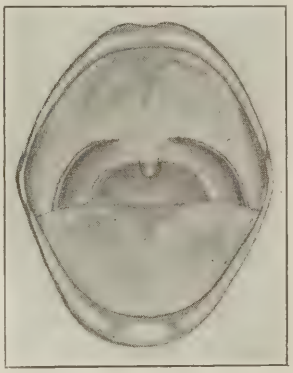

Fig. 4.—The resulting state of a tonsillectomy in a child, showing the condition prevailing one year after operation.

In sixty per cent. of the cases the patients gave as their chief complaint frequent attacks of tonsillitis, sore throat, and quinsy, varying in duration from a few days to eight weeks. In the children this symptom was associated with mouth breathing, restlessness at night, and a "general run down condition." In this group, especially among the children, frequent winter and spring colds were common, complicated by middle ear infection. This tendency was more marked in those patients having an abundance of adenoid tissue. Eight and two tenths per cent. of the patients gave colds as their chief complaint; 3.5 per cent. of the adults complained of rheumatism, and one patient complained of "localized neuritis." Nine per cent. complained of tiredness and a lack of usual vigor. Chorea existed in one child.

The children were given general ether anesthesia, administered by a nurse assistant, and continued by a Sorensen pressure suction apparatus, the nurse thus being free to prepare herself to assist in holding the tongue depressor during operation. The only preoperative preparation was an enema the night before the operation and nothing by mouth the morning of the operation. For the adults, a local anesthetic was used, which was prepared in the office by dissolving one Metz "B" tablet (novocaine 0.1 gm., suprarenin 0.00025 gm.) in seven cubic centimetres of double distilled Ringer's solution and this sterilized. This gives a 1.5 per cent. novocaine solution and 0.002 mininum of 1:1000 adrenalin solution to each cubic centimetre. No preoperative preparation was necessary.

The anesthetic was infiltrated posterolateral to the tonsil, using a fine hypodermic needle on a 5 c. c. all glass syringe fitted with a three and a half inch extension to permit of deep infiltration. The infiltration was started at the superior pole of the tonsil well back from the margin of the anterior pillar in an effort to get behind the tonsil and place the anesthetic in the region of the tonsillar plexus of nerves, anesthetizing the superior pole of the tonsil, the soft palate and palatine arches. The needle was next introduced through the anterior pillar at its midpoint, and carried behind the tonsil infiltrating the capsule and lateral surface of the tonsil. The third point of infiltration is deep beneath the lower pole of the tonsil and on a line with the angle of the jaw. An effort is made to infiltrate behind the field of operation rather than in it. Postoperative pain is thus minimized.

A 26 gauge 3.5 cm. needle was used, which allowed of painless introduction, and deep infiltration. The

injections were made very slowly, using little force. First the right and then the left tonsil was infiltrated, allowing ten to twenty minutes for its effect. Toxic symptoms were rarely noticed.

TECHNIC

First the right then the left tonsil is enucleated. The patient is instructed to open the mouth and breathe in a panting manner. There is little trouble from gagging if the patient will continue to breathe properly. The tongue is then gently depressed along its lateral margin and retracted medially and forward. This gives full exposure of the field of operation, and especially brings into view the lower pole of the tonsil which often lies far down along the base of the tongue, and which may otherwise be left. The right tonsil is seized with a Ballenger tenaculum along its long axis, pulled medially and rotated forward, thus placing the anterior pillar under some tension. The primary incision is then made along the margin of the anterior pillar at a point where the mucous membrane is reflected onto the surface of the tonsil. This incision is carried through to the glistening white tonsillar capsule. With a Hurd dissector the tonsil is gently shelled from its fossa. The dissection is first carried along the anterior pillar well down along the base of the tongue; then the superior pole is freed and the tonsil gently dissected free from the posterior pillar. This completed, the tonsil is entirely free from the pillars and hangs pendulous in its fossa. It is then snared with an Eve wire snare. A gauze plug is immediately inserted into the fossa and held temporarily. This procedure controls any bleeding which may occur. Care is taken not to leave the fossa until rendered clean and dry. An electric headlight furnishes the most satisfactory light.

The operation can be done quickly, causes little discomfort to the patient, and is entirely painless. The minimum amount of trauma and no resulting shock combine to make a quick and comfortable convalescence.

Figs. 2, 3 and 4 are drawings made of throats operated upon in this series of cases. They show distinct well defined pillars, a uniform throat, and a clean well healed fossa.

AFTERCARE

In the ether cases the patients were allowed to react in the office and then returned to their home two or three hours after the operation. In the cases where local anesthesia was used, the patients returned home immediately, with instructions to remain quiet. All patients were permitted cold food on the day of operation, and a regular diet thereafter. A cleansing gargle was used every two or three hours consisting of salt and soda of each one half teaspoonful to half a glass of warm water. Healing was complete in from one to two weeks. The throats remained sore for about one week, but there was little or no discomfort after the first twenty-four or thirty-six hours. Convalescence was more rapid in the children than in the adults. Difficulty in swallowing was relieved by allowing the following powder to dissolve on the tongue: Acetylsalicylic acid, two and a half grains, acetanilide, half a grain.

In only three of the cases in this series was there any degree of postoperative hemorrhage. All were of mild type, and in the cases where operation was performed under a local anesthetic, two were due to dislodgment of large clots by coughing; the other because of a mild inflammatory condition of the surrounding tissues. Both were arrested by direct pressure.

RESULTS

Forty-eight per cent. of the patients have been cured of all symptoms complained of at the time of operation; forty-nine per cent. were very much improved, and three per cent. unimproved. The greatest percentage of cure was in the child groups; sixty per cent. as compared with thirty-four per cent. in the adult group. This is explained by bearing in mind the fact that the chief complaints among the children were the immediate result of their diseased tonsils and adenoids, while in the adult group the complaints were remote results or complicating conditions following long standing tonsillar infection, many of which were permanent or had become chronic. Ninety-five per cent. of the children showed a remarkable gain in general health following the operation. A gain of ten to twenty pounds in weight was not uncommon, beginning a few weeks after operation, and steadily continuing. Along with this was a gradual increase in physical vigor and mental alertness. Children previously backward in school soon came up to the average for their age. The adults were slower in their general gain, yet progressive; associated conditions—neuritis, rheumatism and general malaise—were cured or much improved.

Considered surgically the majority of the cases were satisfactory, throats were uniform, pillars prominent, and fossa clean and smooth. A small percentage showed a less well defined posterior pillar and more or less contraction of the tonsillar fossa. This was noticed in those cases where there were large superficially situated tonsils. A few of the patients complained of some soreness and irritation following operation, especially the reoperative cases.

Since operation the incidence of most infectious diseases has been less during the two year period of observation. This holds especially for the child group, though an increased resistance is noted among the adults. This conclusion is based upon a comparison with similar children who have not been operated upon, as they present themselves at the office for treatment.

Tonsillitis and sore throat were decreased eighty per cent. in the tonsillectomized children. The tendency to frequent winter colds was greatly reduced, especially in those having had enlarged adenoids. In this same group there was a decrease in ear infection. The occurrence of measles was not affected. The tendency to diphtheria infection was reduced.

CONCLUSIONS

1. Tonsil operations should receive the same care in technic as other surgical procedures.

2. The technic can be so simplified as to permit of its being carried out in the office of the rural physician, thus bringing this service within the reach of many who need it.

3. Results are satisfactory.

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Reconstruction of Ankylosed Joints

*With Special Reference to the Aftertreatment**

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Surgery, until recently, has offered no relief to those afflicted with ankylosed joints, though efforts have been made for about one hundred years to reestablish motion by operative procedures. This has been, in part, due to the limited experience of the surgeon, who could not induce many to submit when the chances of success were so slight, and as the number operated by any one surgeon has been small, and usually followed by recurrence, there have been few advocates. Many problems have been elucidated by animal experiments in medicine and surgery, but in bony ankylosis of joints such measures are of absolutely no value, for it would be difficult to produce ankylosis in animals and impossible to obtain intelligent cooperation in the reestablishment of active motion which is positively essential. The early operators devoted their attention towards the prevention of fusion between the bony surfaces, with little, if any, consideration to the synchronous physiological action of all of the component parts, as the muscles, nerve stimuli, ligaments, etc., which constitute the function complex of a normal joint.

Motion in ankylosed joints may be acquired by wide excision of bone, but too often at the expense of stability. A stiff joint in a good position is by far more satisfactory, unless function can be secured with strength, durability, and without pain or tenderness. The operative technic to reconstruct a joint is known as arthroplasty, a well defined surgical procedure, and should not be confused with excision, the induction of pseudoarthrosis. Unfortunately, however, this has already occurred as noted in the recent symposium before the International Society of Surgery. An analysis of one report clearly shows that ninety-two of 180 mobilizing operations were mere excisions and not true arthroplasties.

The scope of the procedure increases with the experience of the surgeon, though care must be exercised in the selection of cases. The following pathological conditions encountered in ankylosed joints decrease the chance of success, or actually contraindicate surgical measures:

1. Tuberculosis. In no case should a joint be entered for the purpose of mobilization when tuberculosis was the causative agent in the production of ankylosis. Undoubtedly, it might be possible to obtain excellent results in some instances, but the probability of lighting up a latent tuberculous process is well known and should be sufficient warning against surgical measures.

2. In those in whom a destructive osteitis, in early life, has obliterated the epiphyses a materially shortened extremity is encountered and mobilization would not be of sufficient advantage to justify the means.

3. Extensive scar tissue, binding the skin to the bone, requires preliminary plastic procedures.

4. Extreme muscular atrophy, with reorganization of bone structure, as is seen when a bony ankylosis has existed over a long period of time and the medulla has become continuous through the joint, as from the ankle to the knee—in such an instance, sufficient base would not be found to reconstruct a functional joint, besides the open medullary canal might be a factor to be considered. The muscular apparatus would also be extremely atrophic and its restoration difficult.

5. Old dense eburnated bone, when found for a considerable distance on both sides of the joint, is not favorable soil for reproduction of a movable joint. Such a condition is usually caused by an extensive virulent osteomyelitis, the result of which is a low grade bone tissue, bearing the same relation to normal bone that scar tissue does to normal soft tissues. In fact, healthy, spongy bone should compose the articular surfaces of the new joint, consequently the chance of success is very slight when the structure of the bone has been transformed for one or more inches beyond the joint line.

6. All evidence of an acute infection must have subsided before the institution of operative measures. This is a well known surgical principle.

7. All evidence of osteoporosis or bone atrophy must have disappeared, with restoration of normal bone before the procedure should be considered.

In fact, surgical operations for the purpose of mobilization are rarely, if ever, permissible except when ankylosis has been caused by two conditions, 1, trauma, 2, infectious arthritis, caused by staphylococcus, streptococcus, pneumococcus, gonococcus, and other organisms. These organisms erode and disintegrate the cartilages and superficial bone of the articulations, unless the infection is in the shaft, when there is an extensive osteomyelitis and not a localized arthritis.

No attempt will be made to collaborate the literature, but merely to relate facts obtained from personal experience in 120 arthroplasties. However, reference will be made without reservation to my former publications.

There are two types of ankylosis, bony and fibrous, the latter less frequently encountered than the former. As the surgical procedures are the same in both, neither is of any practical significance. Extra articular ankylosis or restoration of motion from contractures of the soft parts is a separate equation and irrelevant to this subject.

In the reconstruction of an ankylosed joint, due consideration must be given to four important factors: 1, the soft tissues; 2, the bones; 3, interposition of material between the joint surfaces; 4, aftertreatment.

The plan of attack must be intelligently considered in each case so that when operation is completed there may be sufficient laxity to permit mobility without tension. The joint cavity must be closed by at least one substantial layer of tissue, and, if possible,

*Read before joint meeting of Kansas City Clinical Society and Southwestern Medical Society, October 15, 1924, Kansas City, Mo.

as many as normal. This requires a plastic adjustment of tendons, ligaments and fasciæ. Care must also be taken to avoid nerve injury at the time of operation and thereafter by mechanical action of the reconstructed joint.

In the first cases of a series of one hundred and ten,

Fig. 1.—Simple apparatus for instituting active and passive motion on the eighth day after arthroplasty of the knee.

the technic as described by others was followed, by minutely duplicating the joint surfaces, but after considerable experience, beset with a high percentage of failures, it was discovered that simplicity was a real asset, and that we should strive to reproduce function, and not necessarily anatomical detail—for instance—in the knee joint, as will be later demonstrated one large condyle on the femur and one shallow concave tuberosity of the tibia will acquire a hinge joint which meets all requirements.

The necessity of interposing tissue between the joint surface, as a substitute for the synovial membrane and to prevent bony fusion, has been demonstrated in all of the joints with the exception of the temporomaxillary and possibly the wrist joint. After employing animal membranes, and in a limited number no material, it has been concluded that free fascia lata is the choice. A histological review of normal fascia later was made by O. W. Hyman, of the University of Tennessee, from a specimen removed at operation. He demonstrated that the arrangement of fibres on the under surface was more regular, smoother than the upper layers, and had the same appearance as tendon tissue. In consequence, in transplanting, a sheet of sufficient dimensions is excised, and reversed, so as to place the smooth glistening surface without and thereby accomplish easy gliding motion. The pedunculated fascial flap, advocated by Murphy, has been discontinued except in special conditions, as it is difficult to obtain flap without extensive dissection of the soft parts, with increased local postoperative reaction. And, unless by some plastic rearrangement as defined in technic on the elbow, it is doubtful that viability is permanent, with the result that a free transplant is produced at a disadvantage.

The indications for arthroplasty are rare in those joints whose action may be compensated by motion in adjacent articulations, as the shoulder and ankle. The joints which respond most favorably are, in the order of their chance of success, the elbow, the jaw, the knee, and the hip. The technic of the operative procedure differs in individual joints as does the anatomy and function requiring a special description of the procedure in each.

THE ELBOW

Arthroplasty of the elbow was described in *Annals of Surgery* (May, 1923, vol. XXVII, No. 5), with the exception of recent modifications, as follows:

"An incision is made, from six to eight inches in length, on the posterior aspect of the arm and forearm, just external to the midline, beginning above, about the middle of the humerus and ending about two or three inches below the elbow joint. Skin, superficial and deep fascia are incised without separation, the deep fascia is dissected laterally, about one inch. This brings the broad aponeurosis of the triceps into view. This structure is dissected from above downward, making a long tongue attached to the tip of the olecranon process below. A further incision in the midline passes through the muscular fibres of the triceps and periosteum to the humerus over the lower half. A periosteal elevator is now used to strip the periosteum from the lower third of the humerus. Scar tissue, callous and loose bony particles are removed. If dislocation exists, reduction is then accomplished without difficulty with periosteal elevator, scoop or any blunt instrument.

There is no structure of consequence in the line of incision, no danger of vessel and nerve injury if one remains close to the bone; however, if the ulnar nerve is exposed it can be isolated and anchored into a position of safety. About one half to one inch is removed from the lower extremity of the humerus, which is remodeled into a surface convex from before backward, no attempt being made to reproduce trochlea or capitellum. About one half inch of bone is removed from the tip of the olecranon process. All scar tissue is dissected from the sigmoid cavity. With a sharp chisel the surface is removed to healthy spongy bone. Fusion between the radius and ulna is severed and sufficient bone resected. The surface of the head of the radius must be made the same level as the coronoid process, a rasp and file render smooth all surfaces. Rotation of the radius depends

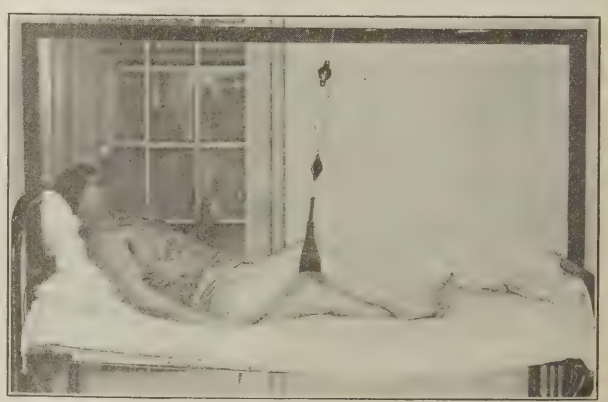

Fig. 2.—Simple sling and pulley apparatus for continuing active and passive motion at the home of the patient during convalescence.

solely on the integrity of the upper radioulnar joint, the radiohumeral playing no part. The periosteum and triceps muscle are dissected into a double flap, which is stitched to the anterior capsule, thus separating the raw bony surfaces by a living mass of tissue with abundant blood supply and no risk of

pressure necrosis. In those cases where the radiohumeral articulation is normal with bony ankylosis between ulna and humerus, the radiohumeral joint is not destroyed, but a hemiarthroplasty is employed between the humerus and the ulna. In such cases it is not always possible to obtain sufficient posterior

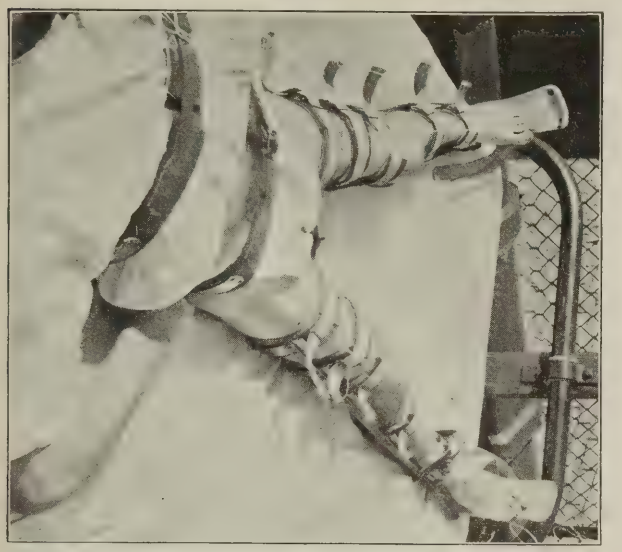

FIG. 3.—Apparatus in aftertreatment of arthroplasty of the hip, holding pelvis firm to insure hip motion and prevent compensatory spinal motion.

flap in lieu of which the aponeurotic broad tongue from the triceps is placed between the surfaces. This structure is also employed when, for any reason, the posterior flap can not be secured. The capsule of the joint is stitched to the posterior aspect of the triceps muscle and deep fascia, thus closing off the new joint—the wound is then closed in layers with catgut and dermal for the skin. In some instances when there have been atrophic muscles, not supplying sufficient tissue to cover the articular surfaces, it has been necessary to employ a free fascia lata transplant.

THE JAW

In the temporomaxillary an L shaped incision, as described by Murphy, is made, and, as emphasized by Henderson, motion is secured by excising sufficient bone, about one half an inch, after which the condyle and joint cavity are made with chisel and small rasp. It is unnecessary to interpose any material. In extraarticular bony ankylosis, with solid bony fusion of the alveolar process, usually the sequelæ of noma, the incision is made in the oral cavity with wide bony excision, or until free motion is secured. The latter type is not a true arthroplasty but is mentioned in this connection as the clinical aspects are the same, and also the aftertreatment. It was necessary to do a tracheotomy in one instance, after which the operation was completed with ease. A tracheotomy tube should always be placed on the instrument table.

THE KNEE JOINT

In remodeling the knee joint no routine technic is applicable but must be modified to accommodate the following conditions: (As described in an address (1) before the Orthopedic Section of the New York Academy of Medicine, January, 1923.)

1. Position, extension, flexion, flexion and external rotation and valgus.

2. Distribution of ankylosis. a. Fusion of patella and femur with tibiofemoral articulation—apparently normal. b. Tibiofemoral fusion with freely movable patella. c. Hemiankylosis—one condyle and its articulating tuberosity fused with the other half of the joint apparently intact. d. Panankylosis—complete bony fusion of patella, femur and tibia, by far the most frequent occurrence.

The operative technic in complete bony ankylosis with extension will be described in detail, after which such modifications as variations may require.

OPERATIVE TECHNIC IN EXTENSION

The skin incision is an inverted U. Beginning just below the inner tuberosity and passing about one inch above the patella, terminating at the outer tuberosity, a straight incision of four or five inches is made at right angles, about one inch external and parallel with the quadriceps tendon, differing from the Putti approach in that the vertical portion is not directly over the tendon—a distinct advantage. In a number of cases recently a long internal incision, parallel with the quadriceps and patella, has been sufficient. After cutting through fat and fascia, dissection is made over the quadriceps tendon, which structure is lengthened by the common Z plastic method, leaving the outer half attached to the patella below, which will later be of value in closing. With a large osteotome the union between the patella and femur is severed. The incision is then carried downward to

Fig. 4

Fig. 5

FIG. 4.—Normal motion six weeks after arthroplasty of the temporomaxillary joint.

FIG. 5.—Solid bony ankylosis of the left temporomaxillary joint, five years' duration.

the bones on both sides, as far as the upper extremity of the tibia. The tibiofemoral union is completely severed, no attempt being made to forcibly flex, even in fibrous cases, until this is accomplished, for fractures of the lower extremity of the femur are easily sustained, and may seriously complicate. The knee is then fully flexed giving free access to the raw bony surfaces of the tibia and femur. In a normal individual, who has no lateral play in the sound knee (previously noted), from one half to one inch of bone is removed from the femur. The surface is then made convex from before backward and on the same plane from side to side, so that the femur presents one large condyle. The intercondylar notch is obliterated in the process. As small an amount of the upper extremity of the tibia as possible is excised

in order to reach healthy spongy bone. With a large gouge this surface is made slightly concave from before backward—one large shallow cavity for articulation with the one condyle of the femur—two points of articulation instead of the normal four. No attempt is made to reproduce spine of the tibia or intercondylar notch of the femur, for there will be no crucial ligaments to prevent lateral displacement which may easily occur, bringing irregular surfaces together with obvious mechanical damage, when motion is instituted. The raw surfaces are next approximated and the alignment of the entire extremity tested. If varus or valgus more bone is removed from each surface until a perfectly straight hinge is formed. Special care should be taken not to produce valgus regardless of the position of the normal limb. Future weight bearing must be direct and in a straight line. The knee is next hyperextended, when there should be at least thirty degrees. If this can not be attained more bone should be removed except in individuals with very lax joints or atrophic musculature, when ten or fifteen degrees hyperextension is sufficient.

Our attention is next directed to the patella—the posterior surface is removed to a very thin layer, just sufficient to be consistent with tensile strength. The lateral margins are trimmed for one fourth of an inch so as to allow the tendinous fibres to fold backward along the edge of the posterior surface. A large rasp renders all surfaces smooth. All recesses are carefully searched with the aid of a magnifying glass, and every particle of loose bone removed. Just below the patella and on the posterior aspect of the patella tendon will be found a mass of fat, and, at times, a layer of synovial membrane, which is severed at the junction with the tibia and dissected from below upward into a flap with a broad pedicle which is stitched with number one catgut, to the margin of the tendinous fibres, above described, along the inner and outer edge of the posterior surface. This is an important step, for in those cases in which ankylosis recurs, adhesion begins between patella and femur and is the most difficult problem encountered in restoring mobility.

Free fascia lata is transplanted from the outer aspect of the opposite thigh, taking a very large sheet, four or five inches in width by eight or ten inches in length, turning the deep surface out, as one of the functions of this membrane is the free easy play of the muscles beneath. This sheet of fascia is placed over four or five inches of the anterior aspect of the femur and attached muscles, being anchored above to the deep fibres of the muscles, it then passes over the condyle of the femur and is stitched to the posterior capsule, as high as possible, after which it drops downward along the posterior capsule and finally forward to the anterior surface of the tibia—all free edges are stitched with continuous chromic catgut well over the margins of the joint. The joint remains flexed sixty degrees for closure, as the capsule may be contracted and if closed in extension free flexion would not be permitted, thus defeating the purpose of the operation. The inner portion can always be united as the vastus internus extends lower and there is more resiliency in the soft parts on the inner side. For this reason the quadriceps tendon is severed above, through the outer half, and below, through the inner half, so that the outer half is attached to the patella. If the edges of the capsule can not be brought together in flexion, a flap of fascia or muscle may bridge the defect, as it is absolutely essential to restore a closed intact mechanical joint. The quadriceps tendon, fascia and skin are sutured

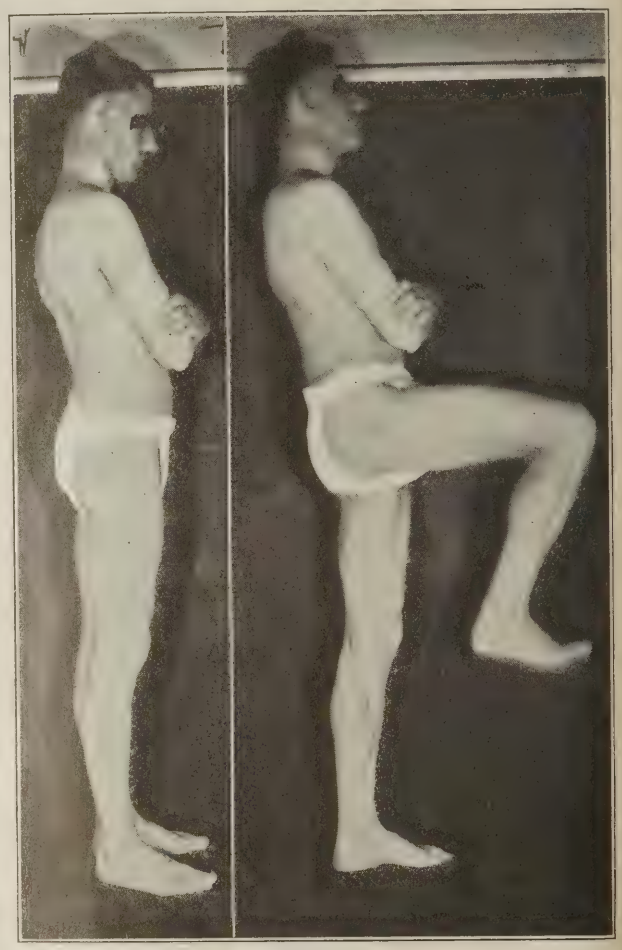

Fig. 6.—Showing extension and 90° flexion of right hip nine years after arthroplasty.

in routine manner, using chromic catgut for deep structures and dermal suture for skin.

Technic in Complete Ankylosis in Flexion

When ankylosis occurs in flexion the anterior structures are redundant after removal of sufficient amount of bone, however, severence of the posterior capsule may be necessary, though stripping of the periosteum above and below, for one or two inches, has been found sufficient. The quadriceps tendon can be retracted to the inner side without dividing, which is an obvious asset. The greater the degree of flexion, the larger the amount of bone excised.

Technic in Fusion of Patella and Femur

In fusion between patella and femur, with an apparently normal tibiofemoral articulation, the position is always extension or possibly very slight flexion. The patella is treated as above described, and in addition a broad sheet of fascia lata, from the outer aspect, folded beneath the patella and quadriceps, being retained in situ by stitching to the vastus internus, the deep surface of the fold facing the patella and quadriceps. This is not a pedunculated

strip, but a living viable fold. When scar tissue invades, a free fascial transplant is taken from the opposite thigh. If the capsule space is not sufficient to allow flexion, plastic adjustment is required.

TIBIOFEMORAL FUSION WITH MOVABLE PATELLA

When tibiofemoral fusion occurs, with a freely movable patella, the incision should be U shaped across the patella tendon. The patella tendon is lengthened by Z plastic method, after which the new joint is remodeled as described above. This condition is not a sequela of acute infectious arthritis, but usually the result of a virulent infectious osteomyelitis, with direct bone infection across the joint space, the interior portion of the joint being protected and walled off by inflammatory exudate, a counterpart of which is so often seen in the abdominal cavity.

TECHNIC OF HEMIARTHROPLASTY

Occasionally a considerable portion of the joint surface is intact and may be conserved. This may frequently be accomplished in the elbow and shoulder, described in a recent article as hemiarthroplasty. After remodeling the affected portion of a pedicle flap is usually quite sufficient.

There are several points to be elucidated:

1. The amount of bone to be removed depends upon the position of the limb, the contracture of the soft parts and the musculature of the individual. Roughly speaking, from one to one and one half inches, though possibly as much as two inches has been removed. A satisfactory degree of hyperextension may be secured.

2. Inequality. Shortening has never been of practical disadvantage nor a question of consequence, if a movable joint is attained. If over two inches a stiff joint, in an improved position, would be more satisfactory.

3. Instability. An unwarranted fear if one remains within the bounds of reason and does not remove too much bone from the pedestal—the tibia, and if normal healthy bone, free of osteoporosis, constitute the articular surfaces.

HIP

In the hip the typical Kocher U incision is made in most cases, occasionally a modification of the Smith-Peterson incision by continuing the lower end backward. The greater trochanter is chiseled at the base giving access to the head and neck. It is often impossible to determine the articular line. With a curved wood carver's chisel, as used by Dr. Baer, the bony fusion is cut at the junction between the neck and ilium. With Murphy instruments a new acetabulum and head are reconstructed. If a true ball and socket joint is to be reproduced there must be sufficient neck of the femur available. A large strip of free fascia lata is transplanted from the outer aspect of the same thigh, just above the knee joint, with which the head is entirely covered and a fold is reflexed over the acetabulum. The pedunculated fascial flap in some instances may be employed.

ANKLE

The indications are rare in the ankle joint. If malposition exists astragalectomy will give a very useful member. As there are only two arthroplasties of the ankle in this series an expression of opinion is unwarranted.

WRIST JOINT

A long posterior incision is made over the midline. The carpus is sculptured into one convex condyle and the radius and the ulna into one receiving cavity. No material is interposed and function is instituted early. If the joint is in dorsiflexion with normal rotation of the forearm arthroplasty is not indicated, but in all malpositions the procedure is worthy of consideration.

SHOULDER JOINT

Arthroplasties are rarely, if ever, indicated in the shoulder joint, when there is compensatory motion of the scapula. In many the bony fusion may be severed, after which rotation of the head will bring normal cartilage into articulation with the glenoid cavity. Should no cartilage be found on the head of the bone a pedunculated flap may be easily obtained.

AFTERTREATMENT

The aftertreatment has been standardized for each joint and must be strictly enforced or failure is inevitable. Apparatus adapted to the requirements of each joint is applied as soon as the operation is completed. In the elbow a simple right angle splint is sufficient—and at the end of ten days active and passive motion is instituted under the direct control of the patient, by a system of overhead pulleys, and an attachment to the head of the bed. A Balkan frame is often used, or a simple wooden bar. No reaction is induced as the movements are made with the normal hand of the patient, who remains within the range of painless motion, which is gradually increased. The splint can be removed at the end of three weeks, but active and passive motion continued until the maximum is secured.

In the jaw a wedge is placed between the teeth in full extension, being removed every hour for active motion, which is begun on the second day. At the end of a week the wedge is discarded. The teeth are cleaned and repaired as early as possible, as there are always extensive caries and oral sepsis. This will enable normal mastication of food which is a natural asset. No joint responds as rapidly as the jaw, complete range of motion being often acquired in a few weeks.

In the knee a Thomas splint with hinge is applied on the operating table, with continuous traction in extension. On the eighth or tenth day active and passive motion is begun by a system of pulleys under direct control of the patient, as in the elbow. The patient remains in bed for six weeks when splint is discontinued and walking is permitted with the use of crutches, but movements continued by overhead sling and pulley.

In the hip a plaster cast is applied, from the ankle to the nipple, in moderate abduction, with weight and pulley extension by adhesive attached to skin, ten to twenty pounds is sufficient to overcome muscle spasm and intraarticular pressure. An abduction hip splint with fixed traction may be used instead of the cast, the Bradford type preferably. On the tenth day the cast is bivalved to the hip joint and the same principle of active and passive motion given as in the knee and elbow. Walking is often permitted with crutches at the end of three weeks, usually much earlier than in the knee.

In the knee and hip the stamina of the bones as determined by the röntgenograms is most important, especially with reference to osteoporosis, or bone atrophy. If such a condition exists, which fortunately is rare, or is increasing, as may occur after any irritation of bone tissue, motion in the part must be guarded, or else the contour of the articular surfaces may become irregular. If weight is borne before structure of bone is of sufficient density there may be further damage, and the entire purpose of the procedure defeated. The joint space may become irregular and increased to such an extent that deformity, instability, or a flail joint is the result. However, when osteoporosis complicates, the restoration of bony structure to normal can always be accomplished by permitting weight and motion to be gradually increased, by adjusting a Thomas splint so as to receive the weight on the tuberosity of the ischium. As the röntgenogram demonstrates that the structure of bone approaches normal, there may be a synchronous increase in weight bearing until the normal is safely possible. There can be no arbitrary period for restoration of function, but as a rule a satisfactory range of motion is secured by the end of three months, which increases with the development of the inactive muscular system, reaching the maximum result by the end of two years.

As a compensation problem, disability is determined from the nature of the employment and the joint affected, in the individual case. In sedentary vocations, as stenographers, clerks, and others, three months is usually sufficient, and, in many instances, two months in the lower extremity, with the aid of crutches. In the upper extremity those acting in an executive capacity may return to their occupations within two or three weeks. In mechanics and laborers, total disability is indefinite and may require complete rehabilitation.

Physiotherapy is a most valuable adjunct and should be employed in every case when possible, but on account of the enormous expense, which many could not incur, the standard treatment for each joint was evolved, thus placing the procedure within the reach of the poorest ward patient.

Rarely it becomes necessary to use brisement forcé, but when indicated, gas oxygen is administered, and the range of motion increased only ten or twenty degrees. If above this point the reaction is severe and may delay treatment until stronger adhesions have formed with actual decrease in function.

It has been stated that fortitude and endurance to an abnormal degree are required, but this is untrue, as motion is not given to the point of excessive pain, which the patient soon learns to control. In early cases before the aftertreatment was standardized, many discontinued on account of pain incurred at the hands of the attendant, or physiotherapeutist, but in recent years there has been splendid cooperation on the part of practically every patient, with a marked increase in the percentage of excellent results.

An analysis of 110 arthroplasties was read before the Surgical Section of the American Medical Association in June, 1924, in which distribution as to joints was as follows:

Elbow, fourteen; jaw, six; hip, twenty-three; knee, fifty-nine; ankle, two; wrist, three; phalangeal, one; metatarsal, two.

As the technic in operative and aftertreatment has improved there has likewise been an elevation in the ratio of successful end results and at present the chance of success is estimated in the four joints, more adaptable to arthroplasty, as in the following tabulation:

Temporomaxillary, ninety per cent.; elbow, ninety per cent.; hip, single, sixty per cent.; knee, seventy-five per cent.

The röntgenogram of a reconstructed joint, after the lapse of sufficient time, demonstrates definite bone production about the margin of the articular surfaces, which has been mistaken for an active proliferative osteoarthritis, though it would hardly be possible to remodel so extensive an area of raw bone without inducing appreciable reaction by osteophytic formation about the margins of the joint surfaces. The argument that such changes are not commensurate with durability is hardly tenable, as the counterpart is found in many useful and apparently normal joints, the sequela of trauma or infection. In fact, those past fifty often present material evidence of osteoarthritis in the röntgenogram without a single subjective symptom.

It has been asserted by several surgeons that function has been secured within a few months with the gradual restoration of motion until by the end of one year or more there was recurrence of ankylosis. It has also been stated that when motion was secured the joints were weak, painful and subject to injury and strain. In order to determine the durability sixteen were personally examined, no evidence by correspondence, or otherwise, being considered. There were four elbows, three hips and nine knees, in which from three to ten years have elapsed since operation. All showed definite proliferative changes in the x ray as would be expected. There had been no retrograde change, but a gradual improvement in motion, muscular power and endurance. About seventy-five per cent. stated that the joint was subject to fatigue after less exertion than the normal joint but that efficient service was obtained. All were enthusiastic in the results as compared to their former condition.

CONCLUSIONS

1. There is a vast difference between arthroplasty and excision. The former is the reconstruction of a joint, the latter the induction of pseudoarthrosis.

2. Our efforts should be directed towards reproducing function and not mere anatomical detail, thus simplifying and standardizing operative technic.

3. Fear of removal of too much bone is unwarranted if one remains within the bounds of reason. Unstable joints are the results of atrophy and not excision of bone.

4. The röntgenograms, after several months, show extensive reactive proliferation about the margins of the articular surfaces, but not a true arthritis. Analogous conditions are found in apparently normal joints, as a result of trauma or infection.

5. The aftertreatment must be intelligently carried out, especially with reference to osteoporosis, or atrophic bone changes, which can be avoided by intensive physiotherapy and gradual weight bearing restricted by special apparatus.

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The Mastoid Operation

A Discussion of the Results in One Hundred Cases

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(*Concluded from page* 206)

We cannot dwell at length upon all the important and interesting features that we have encountered, but a more detailed description of the interesting cases that occurred in our series will be found in a subsequent publication.

Much has been said and written of the mastoid operation. From the time of its early conception in the days of Ambrose Paré up to the present day, numerous modifications, variations and additions have been made rendering it a procedure as systematic, exact and precise as one finds in all the realms of surgery. For its recognized introduceion into the field of otology in 1868 we are indebted to Schwartzae, who also at that time enunciated the indications, principles and technical elements upon which are based the steps of the modern mastoid operation. The fundamental principles governing the original operation are not protean, for all the subsequent innovations are concerned mainly with the minor details of the procedure, the basic technical steps remaining essentially those of Schwartzae. Thus has been evolved over a period of years an operation which has definite indications; a technic which in its execution calls for a systematic orderly approach in the process of eradicating the disease; an ultimate aim to reach the outermost limits of the infectious process so that when the mastoid has been completely dissected we are assured that not the slightest vestige of diseased tissue has been permitted to remain.

In an acute mastoid abscess we are dealing with disease of the bone. The bony partitions that divide the mastoid into compartments are undergoing various stages of inflammation and necrosis. The compartments communicate with each other and are filled with pus, granulations and destructive microorganisms. The process is one of extension spreading at the periphery to the adjacent bone, originating from the region of the antrum. The disease is most advanced therefore about the antrum and from here in all directions to the outermost limits of the disease, the bone is undergoing all the intermediary stages of inflammation. It is impossible macroscopically to determine where diseased tissue ends and healthy tissue begins. It is therefore imperative that the operator not permit the feel of his curette to serve as his guide, in determining the extent of his operation. There is only one safe method. The mastoid must be cleaned out thoroughly, and this can only be accomplished by reaching the outermost confines of the mastoid cavity.

The mastoid process is a honeycombed affair. The cells extend in all directions, being bounded by definite structures which in most instances determine the area through which it is possible for the disease to become disseminated. The anterior limit of the mastoid is marked by the posterior canal wall, the horizontal semicircular canal and the zygoma. The upper limit is the tegmen antri and the floor of the middle cerebral fossa. Posteriorly is the lateral sinus and below is the mastoid tip. The area enclosed by these structures is filled in with cells of varying sizes, the bony partitions extending on to and being intimately connected with the bone covering these structures. For this reason the cells of the mastoid are divided into five groups: 1, an anterior set situated along the posterior canal wall, extending from the tip below to the attic; 2, suprasinus cells located above the sinus over the floor of the middle fossa, and also including the zygomatic cells in front; 3, sinus cells running along the sinus groove; 4, deep cells found between the sinus and the bulb, internal to the facial nerve; 5, the tip cells. Knowing therefore where these various cells are located and bearing in mind the fact that we can never be sure as to the exact limits of the disease, it should be the endeavor of the operator to map out structures which mark the limits of the mastoid and only then can we feel assured that no diseased tissue has been permitted to remain. The zygomatic region should be cleaned out thoroughly. As was first pointed out by Whiting (9), neglect in exenterating these cells is a common cause of failure of the mastoid to heal. The internal table over the floor of the middle fossa should be plainly seen. The groove between the knee of the sinus and the middle fossa must be worked out. The sinus plate should be visible throughout. The deep cells must be sought for and the tip cells opened up thoroughly, and the tip removed wherever necessary.

We operated upon a young man eighteen years of age, in whom we found a sclerotic mastoid. As usual we dissected the entire mastoid until we came upon what most men would have taken for healthy solid bone. But we were bent on seeing the sinus plate, and we worked back fully a quarter of an inch until we struck what appeared to be this structure. While smoothing off with a Richards curette it suddenly gave way and we broke through the bone and there was a sudden gush of pus. The patient had a large perisinus abscess. Had we been content with doing the ordinary antrotomy this would have been overlooked, and we believe that in this case there would have developed a complication.

The mastoid operation as we have practised it is identical with the technic taught us by Dr. Friesner at the Manhattan Eye, Ear and Throat Hospital, New York City. In all our cases we have been thorough. We have made every effort to reach the remotest recesses and we have followed up the disease to its outermost limits. In every instance there has been a clean and complete dissection of the mastoid process. We have paid special care not to expose structures unnecessarily.

It is not our intention to offer any startling additions to the technic of the mastoid operation. We wish to emphasize most strongly, however, the importance of a well developed systematic routine and the necessity of adhering to each and every step in that routine and so foster the most thorough and complete work.

Briefly the steps in the operation as we have performed it are as follows: 1, postauricular curvolinear incision a quarter inch behind the postauricular fold beginning just below the tip and extending to the upper attachment of the concha. This incision will do in the majority of cases; where there is a flat broad mastoid, especially with cells that reach beyond the sinus, the Whiting incision may be resorted to; 2, reflexion of soft parts and periosteum until the posterior and superior canal walls are visible. The entire mastoid should be uncovered and the tip well freed from the surrounding muscle tissue. We wish to caution against dislodging the membraneous canal more than is absolutely essential. Tearing the canal away from the bony attachment is likely to result later in an atresia of the auditory canal; 3, removal of a strip of cortex parallel to the posterior canal wall, beginning on a line with the roof of the bony meatus extending down to the tip. This is best done with the large gouge; 4, with a Spratt curette, preferably one of the medium size, a groove is made along the posterior canal wall; 5, the field of operation is then mapped out by biting off the cortex over the proposed area of operation. This is accomplished by the use of a large ronguer, beginning near the tip, for the sinus is situated deeper at this point. In using the ronguer it is safer to take small bites; 6, the original groove is now deepened and widened. This will usually result in the opening of the antrum. All the cells along the posterior canal wall are cleaned out thoroughly. In this locality the small Spratt or Richards curette may be used to advantage. A boring motion, working from above downward, using the upper limit of the mastoid as a fulcrum, always working parallel to the canal wall, will prove both efficacious and safe; 7, the cells over the middle fossa should be scraped and all overhang removed until the internal table is plainly visible. Continuing forward we proceed to the zygomatic area and clean out all the cells in this locality. In some instances this region is quite extensive and to be thorough will oftentimes bring us far beyond the meatus. Our work here must be exceedingly careful and gentle, for the dura is very easily exposed; 8, the cells in the groove between the middle fossa and the knee of the sinus are now attacked. These cells are often much diseased and it is absolutely essential that they be thoroughly excenterated. We have used the medium sized Spratt curette to great advantage in this region; 9, the sinus groove should now be freed of cells. This is best accomplished by using the large Richards curette employing strokes parallel to the sinus. The cells often extend well beyond the sinus and we must bite off overhang and curette repeatedly until all disease has been removed. The sinus plate should be visible along its entire extent. The deep cells situated between the sinus and the bulb internal to the facial nerve are best opened with a small Spratt curette; 10, the tip is then removed with a ronguer following the digastric muscle. In all adults we have removed the tip, in young children there is so little tip that we have permitted it to remain; 11, the posterior canal wall is lowered with a small ronguer and all bony edges are smoothed off with a large Richards curette; 12, the aditus is enlarged. The granulation tissue in the attic should not be disturbed. We have not curetted in this region; 13, the operation being completed, the mastoid cavity is irrigated with warm saline, the débris and loose shreds removed. The cavity is then swabbed with iodine. Iodoform gauze packing is used and the canal is cleaned and packed with plain gauze; 14, sutures are employed in adults, closing the upper half of the wound. Where there is exposure of the sinus and dura to any extent, and especially where there is disease of these structures, the wound is left widely open. In all children we have employed the same procedure as above. In subperiosteal cases sutures have not been used and the edematous soft parts have been thoroughly curetted; 15, dry dressings are applied externally.

In regard to the aftertreatment, in our cases we have followed the well known surgical principles governing the treatment of surgical wounds elsewhere. We are all agreed that the period of convalescence and recovery can be materially shortened by careful and well applied aftertreatment in mastoid wounds, and on the other hand this period can be prolonged for weeks and weeks, as a result of improper care and attention and the failure to bear in mind certain fundamental surgical factors which are peculiar to the healing of wounds of this kind.

As a result of the completed mastoid operation, there is created a bony cavity which in the process of repair and healing becomes filled in with newly formed tissue. This process of replacement of the defect must begin in the deepest part of the cavity and gradually make its way to the surface. Therefore until this takes place the superficial borders of the wound must be kept patent. Furthermore this attempt to keep the wound open insures free and easy exit of the secretions which invariably are infectious. The continual bathing in pus of newly formed granulation tissue is apt to infect it and so convert it into a foul smelling poorly nourished mass that cannot be utilized for reconstruction. The wound refuses to heal under these circumstances; the process of repair is impeded. It is therefore most essential that the dressings be changed often enough to accomplish this end.

The condition of the middle ear is also an important guiding consideration. It is certainly to be considered a poor result in which the mastoid wound heals and the middle ear remains moist with the persistence of a perforation in the drum membrane. It is therefore essential that posterior drainage be maintained as long as possible in these cases where the middle ear continues to discharge.

It is the minor details often that govern to a great extent the efficiency of our methods and it is to these that we wish to call special attention. The matter of dressings and when to do them is of paramount importance. In uncomplicated cases the first full dressing should be done on the fifth day. Outer dressings may be changed as often as becomes necessary. For the first week thereafter, we have advised

daily dressings and we have found as a result much cleaner wounds. After the twelfth day the patients are seen every other day. As soon as possib'e we dispense with the bandage and employ adhesive dressings instead. For some reason or other this change seems to have a most beneficial effect, be it psychic or otherwise, for it has been noted that healing seems to progress more rapidly.

At each dressing the canal should be swabbed with hydrogen peroxide and freed of all secretion, and thoroughly dried. A sterile piece of packing is then introduced very lightly. Haste, rough handling, or lack of care in its insertion may result in injury of the lining of the canal, thus breaking its continuity. With the presence of pus constant infection may thereby be introduced with subsequent external otitis localized or diffuse, a painful and most uncomfortable complication. Packing the canal tightly is unnecessary and may cause discomfort for hours after.

When granulations spring up overabundantly, they may be controlled with the silver stick. If they become unhealthy, the curette or scissors may be used to remove them. When the wounds are clean, in order to hasten the growth of granulation tissue, balsam of peru has proven very efficacious.

We hardly feel it necessary to emphasize the great importance of carrying out the strictest aseptic measures in the dressings of mastoid wounds. Success in obtaining rapid healing will depend largely upon the observance of this feature.

The complications of mastoid disease are numerous and result not only from the disease, but also from the performance of the operation itself. We are all agreed that some complications are unavoidable; while others may be justly attributed to faulty technic on the part of the operator.

In consideration of these complications we wish to enumerate the following as we have encountered them in our series: 1, death; there occurred one death in a child, aged two years, seven hours after the mastoid operation. The child was apparently normal; the operation ran off smoothly; no structures were injured; the child came out of the anesthetic in good condition. Death was sudden; the possible causes offered were embolism, shock, or a latent basilar meningitis; 2, sinus thrombosis. There occurred two cases of lateral sinus thrombosis, one discovered at the primary operation, and the other secondary; 3, meningitis, no cases; 4, facial paralysis, no cases; 5, erysipelas, we have encountered two cases, one was the socalled white erysipelas; 6, brain abscess, in one patient in whom we operated for a Gradenigo, complicating scarlet, we probed for a temporosphenoidal abscess, but failed to find pus. This patient had localizing symptoms. Four days after the mastoid operation she had a convulsion, and became comatose. After coming out of her coma, she had a distinct aphasia, with a partial hemiplegia of the corresponding side. The case was seen by Friesner, Strauss, and Elsberg, and all agreed upon the diagnosis. As was stated before, no pus was found and the patient made a complete recovery; 7, labyrinthitis, no cases; 8, infection of the tissues of the neck. In our series there occurred two cases of Bezolds mastoiditis, in both cases we counterdrained from below. In another patient, an adult aged forty-two, there occurred an extensive induration down the neck to below the clavicle. The entire area was tender and painful. We treated it expectantly. The induration disappeared completely without pus formation. Aside from the complications mentioned above there were no others that occurred in connection with our cases.

In the series of one hundred cases we have not had occasion to perform one secondary operation and we have attributed that to the thoroughness of our work. In all the cases at the time of discharge the posterior wounds were perfectly and securely healed. As has been pointed out before it is the endeavor of the otologist to obtain a dry ear. And when this is not the case, the result is not a perfect one. However, as in other conditions this is often unavoidable, or at least, strive as hard as the otologist may, the ear remains moist despite all his efforts. Some assert that failure to remove the granulation tissue in the attic at the time of operation might be put down as a cause of the persistent discharge. This might be true, but cases clear up in which these granulations in the attic are not disturbed. We would, however, urge the removal of the adenoids in these cases, just as has been recommended in middle ear disease, in which the discharge persists. In at least four cases did this procedure prove successful. Of the one hundred cases two patients were discharged with moist ears. The remainder all were dry. Out of these that were dry three had persistent perforations in the drum membrane and in the others there was a complete resolution of the membrana tympani.

The state of hearing should be an important concern to the otologist. But the average man is likely to entirely forget this particular phase. If the mastoid is healed and he does not note any discharge from the canal, he discharges his patient very often without taking a final look into the middle ear. Surely the state of hearing must concern him much less. As in simple otitides it is necessary to inflate the middle ear early in order to obtain full and permanent restoration of function, so it is necessary in mastoid cases that the middle ear should receive proper attention. As a rule if a mastoid is operated upon early, we expect practically normal hearing to return. Only occasionally does one find some slight impairment. In all of our cases in whom the middle ear became dry, with complete resolution of the membrane, the hearing returned to its normal state. So we can say that the mastoid operation does not in any way prove detrimental to the auditory function.

In conclusion we wish to state that the mastoid operation has its definite and distinct indications; that with these indications present the mastoid should be cleaned out without delay; that the operation should be thorough and complete; that in the after treatment there should be the observance and adherence to those surgical principles governing the treatment of mastoid wounds as outlined above. Only then can we hope for the avoidance of unnecessary secondary operations and look for a shortened period of convalescence with permanent union and the restoration of normal function.

691 Lafayette Avenue.

Historical Medicine

Fifty Years of Surgery—1875-1925*

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Philadelphia, Pa.

"Man's span of life," according to the psalmist, "is but as yesterday when it is passed, and as a watch in the night." Applied to the life history of surgery during the past fifty years the figure of speech becomes a reality, representing as these years do the dawn from a passing night rapidly developing into the day of brilliant sunshine. Indeed, so rapidly has the science and art of surgery advanced during these years that it is difficult to realize that most of the procedures and the armamentarium at our command today have been developed during the past half century in our history. What this same period will appear like to him who fifty years hence will be reviewing from this same rostrum a half century or a century of the achievement in surgery it is difficult to foretell. If the ideals of preventive medicine will have been as fruitful as the prophets of today predict, perhaps surgery will have outlived much of its usefulness and will have resumed its original limited field, the treatment of fractures and similar accidents. And perhaps many members of this august body, will be looking for, or mayhap will have already entered upon new fields of activity, instead of basking in the sunshine of the past and glorying in the refulgence of their present day achievement. The rôle of the prophet, however, as you all know is never a pleasant one, particularly in his own country, and I am grateful to your chairman of the Committee on Scientific Business for, and appreciate the honor of having been assigned the more pleasant and agreeable task of looking backward fifty years.

It is a selfevident fact that the phenomenal advance of surgery during this period began with the epochal discoveries of Long and Morton, and of Pasteur, and of Lister. In the 80's ether and chloroform anesthesia had already become well established, but antiseptic and aseptic surgery were still fighting their way to supremacy. The prejudices of the older surgeon were hard to overcome. He was as loath to discard the methods which had served him with a certain degree of success, as he was to give up his blood stained, germ soaked linen duster which had served him for an operating gown. It is not necessary for me to draw a picture of then and now in the operating room, nor of the complete change that has taken place in the entire field of hospital conduct and management. Rather let me proceed to pass in review as best I can some of the outstanding advances in surgical methods.

Fifty years ago, in the words of our own beloved and immortal physician poet—S. Weir Mitchell, anesthesia "the highest mercy brought by man to man," had already

> "Struck from the roll of pangs one awful sum,
> Made pain a dream, and suffering gently dumb!"

At that time and for about a decade more general anesthesia, enriched later by the addition of the gas oxygen method, was almost exclusively used, until its supremacy was threatened by the introduction of local and spinal anesthesia, this new method has widened the field of surgery and to even a larger extent has reduced the risks of general anesthesia and has transferred many types of cases from the inoperable to the operable class. Still in the process of development it offers a splendid field for research and profitable investigation. But it is doubtful whether it will ever entirely supplant general anesthesia, although combined with a light general narcosis its usefulness stands unquestioned. The first step in the introduction of local anesthesia is represented by the introduction of the local application of cocaine. The pioneer in filling what proved to be a longfelt want is Karl Koller, who in 1884, published the first account of the use of cocaine as a local anesthetic in operations on the eye. That the method filled a longfelt want is evidenced by its remarkably rapid spread and development and its adoption in practically every field of surgery. To the late lamented W. S. Halsted belongs the credit of having been the first to use cocaine in general surgery.

The early enthusiasm, however, was somewhat dampened by the toxic effects of the drug, mainly due to imperfect methods of manufacture and its consequent admixture with impurities, as well as to the limited facilities for its production, so that the demand being far in excess of the supply caused an enormous inflation in its price. But the synthetic production of the drug soon corrected both these evils, and at the same time led to the discovery of many synthetic drugs. Notable among the latter is novocaine, discovered in 1905 by Adolph Einhorn, which seems to combine the requirements of a local anesthetic without any of its disadvantages.

Thus armed with the means of making "suffering gently dumb" and enriched with the growing power of controlling infection, the surgeon boldly threw down the barriers that had hitherto blocked his path, especially in the domain of abdominal surgery. But in spite of Lister's antiseptic methods, the early days of this new era witnessed many discouraging results and thoughtful men soon realized that Lister's theory of air borne infection was only partially complete, especially when applied to intraperitoneal operations. Prominent among such keen observers stands Lawson Tait, who was among the first to emphasize asepsis rather than reliance on chemical antisepsis. Animal experimentation also helped to demonstrate the destructive action of certain chemical antiseptics on certain tissues, especially within the abdominal cavity. And at this time Pasteur himself boldly attacked the theories of some of the eminent physicians of his day on the cause of puerperal infection by showing that the infection was carried from a sick woman to a healthy one by the doctor himself, and

*Read before the College of Physicians of Philadelphia, April 1, 1925.

illustrated his theory by drawing on the blackboard the picture of the culprit—the now familiar streptococcus in chains. This may be said to be the actual beginning of the revolution in operative technic consisting of strict surgical asepsis of all instruments, the use of rubber gloves, sterilized operating gowns and scrupulous asepsis applied to everything and everyone connected with the operation. Today these measures are so much a matter of course that it seems almost banal to mention them.

Hospital construction naturally kept pace with these advanced ideas and there is the same difference between the modern hospital and the hospital of half a century ago as there is in the surgery of then and now.

I have already mentioned that the earliest field invaded by the newer surgery was the abdomen. Abdominal surgery, which before 1875 was considered more or less criminal surgery, rapidly came into its own and exploratory laparotomy was from now on considered a perfectly legitimate procedure. Indeed, the abdomen henceforth (to use the apt expression of our great and greatly beloved Keen) was destined to become the playground of the surgeon. While many of the "ectomies" now in general use had already been attempted in the early days immediately following the introduction of ether anesthesia, they were abandoned as unsuccessful and dangerous. These were now being revived under the beneficent sway of asepsis, improved technic and increased familiarity with the procedures. Not only that, but entirely new operations were being devised, many of which represent some of the most striking contributions of our era to the history of surgery.

The decade from 1875 to 1885 witnessed such important innovations as Porro's Cæsarean section with excision of the adnexæ; Freud's excision of the uterus; Lawson Tait's operation for extrauterine pregnancy. Billroth, in 1880 performed the first pylorectomy for cancer of the stomach. This was followed by a rapid succession of anastomotic operations, the first and most familiar of which is Wolffler's gastroenterostomy in 1884. The gallbladder was successfully removed by Langerbuch in 1882. Each of these procedures, modified and improved, has become a daily occurrence in all large clinics.

The year 1886 is marked by Fitz's memorable study of the pathogenesis of appendicitis, which perhaps more than any other single investigation has changed the concept of the causes of intraabdominal infection and eliminated the then prevalent term of idiopathic peritonitis from the medical vocabulary. During the next few years surgery was enriched by O'Dwyer's improved method of laryngeal intubation, a distinctly lifesaving measure, but the indication for it is being reduced to a minimum by the present day methods of antitoxin treatment for diphtheria. Mutilating bone surgery and amputations were being replaced by nonmutilating, orthopedic and plastic operations. MacEwen's osteotomy, opening large joints, restoring ankylosed limbs, belong to the period before the close of the 19th century. All these were matters of daily occurrence and enjoy a large degree of certainty of good results. Horsley's laminectomy also belongs to these years, and at this time suture of the heart was attempted with success. Gynecology was enriched by Wertheim's operation, and so the story could proceed from one innovation to another and from one advance to another.

During this period of evolution it was but natural that the instrumental armamentarium of the surgeon should keep pace with advance in surgery. The number of new devices is legion, but it may be well to mention some of the more outstanding ones which have facilitated our work. Hemostats were modified and improved, the Kocher forceps is a notable contribution; the ingenious Murphy button still serves a useful purpose for anastomotic operations; although most surgeons today have returned to suturing as a more desirable method of joining resected viscera. A notable innovation is also represented by the Paquelin cautery. Posture during operation came in for adequate consideration and we use the Sims position, the Trendelenburg position, and the like, on tables expressly fashioned for such changes in position. Practically every surgeon has devised some modification of the usual instruments to facilitate his work.

It was but natural that the entire change in surgical methods, and I may say surgical thinking, should demand increased facilities for diagnosis. The development of endoscopy at this time supplied this desideratum and placed at our disposal the ophthalmoscope, the esophagoscope, the bronchoscope, the rectoscope, the cystoscope, and other instruments by which direct inspection of pathological processes has been greatly facilitated. Whether these devices gave the impetus for the rise of the surgical specialties, or whether the rise of the specialists produced the instruments, the fact remains that the years between 1890 and 1900 saw the separation of surgery into specialties which today is taken entirely for granted, such as the treatment of diseases of the eye, ear, nose and throat, genitourinary surgery, and so on.

The surgeon of fifty years ago might have been able to predict some of the advances in surgery which I have attempted to record, but it is doubtful whether anyone, no matter how imaginative he may have been or how optimistic, ever dreamed of the possibility of direct inspection of practically all parts of the body as provided for us by that most notable and I may say romantic invention of the physicist, Wilhelm Conrad Roentgen. Does it not sound like a page from a romance that the accidental placing of a glowing electric light bulb upon a book containing a metal key and under which lay a photographic plate, should have led to the discovery of a ray of light, invisible to the eye, capable of traversing solid substances! From now on the demonstration of pathological changes, of injuries to the bony system became possible. Not only that, but with development of the roentgen ray today we are able to inspect the body viscera and observe function so that the roentgen ray diagnosis has become an almost indispensable diagnostic adjunct, particularly in disease of the lungs, the heart, gastrointestinal and genitourinary tracts. However, I have on more than one occasion registered my protest against allowing x ray diagnosis to replace rather than to confirm or enhance clinical diagnosis. The danger is an ever present one and the warning bears repetition.

During these years then, the years of acquisition, if I may so call them, we were learning much about how to operate, and at the same time why to operate and when to operate. In other words, surgical pathology rapidly found a most important place in surgical endeavor. Hitherto pathology had been limited practically to external pathology, and the dead in the postmortem chamber were teaching the living. But henceforth it was destined to be superseded by internal pathology, whereby the living teach the living. Pathology of the living is the term for this so happily coined by that master surgeon, Sir Berkeley Moynihan. This unquestionably represents the most vital factor in medicosurgical advance. Animal experimentation, of course, has played an important rôle in progressive work, indeed it represents a large part of the pathology of the living, and through it there have been opened up entirely new paths of investigations for the physiologist, the surgeon, and the pathologist, such as glandular function, neuropathology and localization, functional pathology of the gastrointestinal tract, and so on.

The phenomenal development of bacteriology during these years provided another notable contribution to our knowledge of both why and when to operate. New discoveries in this sister science succeeded each other with bewildering rapidity, and were gradually routing from their lairs the hidden causes of many infections. To mention only a few I may call attention to the discovery of the bacilli of anthrax, of gas gangrene, of diphtheria, or of meningitis, the gonococcus, the pneumococcus, the streptococcus, the staphylococcus, and the colon bacillus. These naturally led to the discovery of others related to visceral lesions which concern the medical man and the surgeon alike in their various fields of activity.

Closely allied to this new avenue of research is the science of serology which has written an entirely new chapter in the history of our profession. It has revealed the importance of the organs of internal secretion and has thrown light on many obscure and delicate biological reactions. Its demonstrations of the influence of glandular activity on metabolism and vital functions, on growth and regeneration, are among the most noteworthy contributions to the medical sciences. Surgically its import lies in the revelation of the interdependence of all the components of the endocrine system which has brought about so marked a change in our conception of certain disease processes and a resulting change in therapeusis.

In line with this is the recrudescence of blood transfusion. The idea of blood transfusion was germinated in the minds of surgeons for many centuries of time. Indeed, it was attempted as early as 1667 by a Frenchman, Denis, but with such results that any further use of the procedure is said to have been prohibited by parliamentary edict. It was repeated from time to time by other surgeons with indifferent or altogether unfavorable results. No wonder, as for its success was needed not only the strict antisepsis of modern times but also the advance in vascular surgery of our era. Provided with these and with a thoroughly physiological habit of thought, it remained for our own Crile, about thirty years ago, to reintroduce the procedure which in its subsequent development has become one of the most useful measures at the disposal of the surgeon in great emergencies. The correlated method of storing up collected blood with the addition of sodium citrate has added much to the value of the procedure.

The why to operate is but the application to practice of a new manner of thinking which was developed during these years. It can be best expressed as the pathologicophysiological habit of thought. This new habit of thinking is no doubt responsible for the return of surgery to the dignified profession which it is today. Where formerly the surgeon was merely the handyman for the internist, today the internist is, or should be, glad to have the surgeon not merely as his operator but as his cooperator. Surgery and medicine are now too closely allied ever again to be so widely separated as in former days. It is to the interest of the patient, the final goal in all our work, that this entente becomes closer and closer in order to insure the best results. I shall revert to this later on. The surgeon's knowledge of when to operate should be called into action early and it should be left to him and not to the internist to decide. Every surgical disease has "its surgical hour" which taken at its best bids fair to lead to victory.

If, as I have intimated, the new science of bacteriology received a marked impetus through the new habit of surgical thinking, surgery in turn owes it a vast debt in one of its most triumphant fields of usefulness, and that is the recognition of the surgical hour that bids fair to lead to victory. We need no figure to convince us that the timely recognition of, and timely intervention in, acute disease of the abdomen is one of the outstanding achievements of modern surgery. There is no way of reckoning the countless numbers that have been saved by this advance. And for many chronic infections there is the possibility of a cure by removal of the infected organ, such as the appendix, the gallbladder, chronic pus tubes, cystic ovaries, infected uterus, the diseased kidney, the enlarged prostate, the spleen.

It may be consoling to the laymen particularly that there still are some organs that have escaped the scientific greed of the surgeon, to use the term of a French surgeon, such as the pineal gland and the suprarenal capsule, the pancreas as a whole, the medulla oblongata, and the cardiac valves.

But even the heart and the lungs are nowadays not closed to the path of the surgeon's knife. In some quarters claims have been made that surgery has cured certain types of cavernous pulmonary tuberculosis and bronchiectasis. Operative intervention in pulmonary abscesses has become much safer than ever before. Surgery of the heart, it is true, is being written about probably more than it is being practised, but the results are encouraging, considering that this is the early stage of development of a very delicate procedure.

Brain and spinal cord surgery have made remarkable strides during the past twenty-five years, particularly in the localization diagnosis of disease of these regions, and this advance is one of the best illustrations of the cooperative work of the clinician and the surgeon. Although the special structure and

physiology of the brain and its centres interferes with the absolute success of surgery in this region, nevertheless there can be recorded a distinct gain in the treatment of tumors of the cortex and even of deepseated ones in the cerebellopontine angle and the hypophysis, which together with the surgery of the spinal cord excites the well deserved admiration of the profession. Rapid strides in vascular surgery mark an outstanding achievement of our time, especially in the treatment of traumatic aneurysms.

In a retrospect of more recent years war surgery supplies an important chapter. It is interesting to note that the emergencies aroused at the time witnessed a return to the early methods of chemical antisepsis as represented by the much lauded Dakin's solution. Débridement of wounds, although practised many years ago and much in vogue even before the war, was revived. Plastic surgery received a tremendous impetus during these years, the effects of which are perhaps more noticeable in civil surgery than any other procedure stimulated by the exigencies of war.

It remained for the younger generation to evaluate what the war brought forth in surgical methods, and I shall leave this aspect of my subject to them.

Our history, as I have endeavored to point out, shows an ever increasing tendency toward a consideration of why and when to operate, a practice that was scarcely possible before this era. Formerly the main reason for operation was the immediate saving of life, without a great deal of thought of the resulting possible morbidity. Today we are in a position to aim at conserving life with a very high degree of restoration of function. The essential desiderata for attaining this ideal and for which the coöperation of all branches of the medical sciences must be brought into play are adequate diagnosis, and to no less extent adequate preoperative and postoperative treatment. These are part of the physiological habit of thought which marks our time, but they demand the free and willing coöperation of the clinician, the surgeon and the scientist.

We can point with pride to the problems that have been solved, but we dare not fail to realize that there are still many which seem to baffle solution. I need but mention our ignorance of the cause of cancer which makes our treatment of that malignant disease still a matter of empiricism, and which of itself is enough to humble the proudest among us. Perhaps the solution of the problem will also come from one of our sister sciences. Medicine and surgery owe a vast debt to nonmedical men; Pasteur was a chemist, and Röentgen a physicist.

1634 Walnut Street.

Experiments on Man Demonstrating the Dynamogenic Power of a Liquid Extract of Animal Testicles

M. BROWN SÉQUARD

Translated from *Archives de Physiologie*, Fifth Series, No. 1, 1889, p. 651, by L. L. Stanley, of San Quentin, California.

(*Concluded from page 229*)

Because of a natural impetuosity, and also to avoid a loss of time, I had up until the age of sixty, the habit of going up and down the stairs almost on the run. This mode gradually changed and I came to the point where ascending and descending were quite slow. It even became necessary for me to hold to the handrail on the steep stairs. After the second injection, I affirm that I had regained my lost propensities and had without realizing it regained my old habits. The strength of my limbs measured in comparison to the week preceding my experiments and during the month which followed the first injection has been remarkably increased. The flexors of my right arm registered on the average of thirty-four and one half kilograms (from thirty-two to thirty-seven kilograms). After that injection the average was increased to forty-one kilograms (from thirty-nine to forty-four kilograms), the gain being consistently from six to seven kilograms.

The flexors of the forearm have likewise recovered the strength which they had twenty-six years ago. They recorded at that time (1863) an average of forty-three kilograms.[4]

I will say that if some think that nothing is more variable than the strength as measured by the dynamometer, they come to that opinion because they do not take into consideration the state of health of the subject nor the time of day the test is made. If digestion is good and if the other functions are not impaired, one finds that the strength as measured by the dynamometer at the same time of day, does not vary more than five to nine kilograms. But it is necessary that the subject always hold the instrument in the same manner and that he grip in all tests with all the strength that he can. I have always kept track of all the circumstances and consequently I can say that the strength which I gained has been considerable.

I have measured by comparison the flow of urine before and after the first injection. The circumstances in both cases were the same. The compared output was that which followed the same kind of a meal in which I drank the same amount and the food I ate was of the same kind and quantity. The shortest length of the stream during the ten days preceding the first injection was at least one fourth shorter than it was during the twenty days which followed. It is certain that the power of the spinal cord on the bladder was considerably increased.

Perhaps the most distressing of the misfortunes

[4]Since 1860 I have recorded in the same manner almost continuously the strength of my forearm. From that time up to 1862 I recorded at times as much as fifty kilograms. During the last three years from 1886 to 1889 the greatest which I could record was thirty-eight kilograms. This year before the first injection the greatest was thirty-seven kilograms. Since that injection it has been forty-four kilograms.

of old age consists in the weakening of the power of defecation. The expulsion of fecal material had become with me in the past ten years extremely laborious and it was almost impossible without the use of purgatives or artificial means. I made regular use of laxatives, not so much for the constipation which was very great except at rare intervals, as to increase the motive action of the intestinal well.

During the fifteen days which followed the first injection a radical change took place in the reflex of defecation; I had less need for laxatives and moreover, the expulsion of fecal material equally as large and hard was accomplished without mechanical assistance or lavage. There had taken place a return to a normal condition of a number of years before.

I will add that intellectual effort became easier than it had been for a long time and I have regained in that respect all that I had lost. I can say also that my other forces, not lost but decreased, have been remarkably strengthened.

It is evident from these facts and others of which I have not spoken that all functions dependent upon the dynamic power (*la puissance d'action*) of the nerve centres and especially the spinal cord are remarkably and rapidly improved by the injections thus employed. The last injection was made on June 4th, over three and one half months ago. For more than four weeks there has been no change in me, all the improvements having persisted. But gradually and rapidly since July 3d, have noticed an almost complete reversion to the condition of weakness which existed before the first injection. This gradual loss of strength is an excellent proof in that it shows the favorable influence upon me of the subcutaneous injections of a fluid taken from the testicles.

V.

I am writing about that which followed since last June, "I hoped that other physiologists of an advanced age would repeat these experiments and show whether the results I obtained upon myself depended upon my own personal idiosyncrasy or not. As to the question of knowing that it is a sort of autosuggestion without hypnotism to which can be attributed entirely the changes which have taken place in my organism, I do not wish to inquire into at this time.

"That interesting piece of work by Dr. Hack Tuke (*Illustrations of the Influence of Mind Upon Body,* 2nd edition, London, 1884, 2 volumes) is full of the facts showing that many changes which I have observed upon myself after the injections which I have taken, could be caused by the influence of a single thought (*la seule influence d'une idée*) upon the human organism."

In the history which I will give in another place of a considerable number of cases in which injections similar to mine have been made, without the individuals knowing whether it was desired to find out whether they gained in strength, that result has in fact been obtained.

It is therefore evident that it is not a result of a kind of autosuggestion and that the forces of the nerve centres are increased and that it can well be to a special action of the fluid injected that this effect is due.

Papworth, the First Village Settlement for the Tuberculous.—"Enquiries about Papworth continue to be incessant," writes P. C. Varrier-Jones, medical director of this tuberculosis colony at Papworth Hall, Cambridge (*World's Health,* August, 1924). "What is Papworth? . . . Why has sanatorium treatment failed? Papworth has not only revived the present system of sanatorium treatment, but has extended it. . . . Papworth has tried to answer the question: Why does a working man consumptive break down after a period of sanatorium treatment?—and provide a solution. The usual answers given are: 1, that his home conditions are unsatisfactory. . . . 2, that his conditions of work are against him . . . 3, that the economic conditions of the workaday world are against him." Papworth strives to fill all these lacks.

The Cambridgeshire colony now numbers 196 persons, including 70 children, according to its report for 1924. Patients are admitted in all stages of consumption, and the work they do is assigned according to their strength. There is no limit to their term of residence, and they are encouraged to settle permanently with their families in the colony. It thus becomes possible for persons whose working capacity is below normal to continue doing part time work often for many years, instead of being pushed to the wall in the competition of the outside world. This not only makes the patient who is capable of part time work a happy and useful citizen, but the whole plan is a sound business proposition, for it keeps the man from going under a short time after being dismissed from the ordinary treatment because he tries to compete with workers who are more able bodied than himself.

Schopenhauer and Beards.—Schopenhauer wished to have the wearing of beards banned, not only because the custom was "immoral" but because they had a lustful character pleasing to women. Many times he expressed this opinion in the course of his polemics with Hegel who wore a tawny beard. "The length of the beard," he said, "is in proportion to the state of barbarity of the times. This is why the barber flourished in the Middle Ages, that period of rudeness and ignorance which our noble contemporaries are actually striving to imitate in dress and architecture. They say that the beard," he adds, "is natural to man. It is true that it suits man perfectly in a state of nature, just as civilized man ought to be clean shaven to show that brute force, of which the beard is the evident symbol, must give way to law, order and manners. The beard emphasizes the animal portion of the face and makes it prominent; it thus gives a particularly brutal appearance to its wearer. Watch a bearded man while he is eating. . . . The police ought to forbid beards because they constitute a half mask under which it is difficult to recognize a man. The changes of expression which indicate the life of the spirit are to be found chiefly about the mouth; it is a thing which can under certain conditions become dangerous, and for deceiving the watchful eyes of adversaries, nature, who knows the *homo homini lupus,* has given man a beard. For this reason woman, in whom self knowledge and dissimulation are innate, cannot pass by it."—Translated from *Æsculape.*

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Aniline Dyes in the Study and Treatment of Gastrointestinal Disorders*

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New York

The therapeutic use of aniline dyes has until recently been quite restricted. The low toxicity of the dyes, when compared with other more widely used antiseptics, will in all probability result in their more universal usage. Methylene blue (1) was the first of the dyes to receive special study. It was used in Europe between 1886 and 1898 for the treatment of malaria and neuralgia. Since that time numerous satisfactory reports concerning its use in eye, ear, nasopharyngeal and genitourinary specialties have been published.

At the present time I am concerned with the study of the therapeutic effect of two aniline dye substances —acriviolet and acriflavine. I have been materially aided by the experienced advice of Dr. John W. Churchman, who has demonstrated the penetrating, antiseptic and nontoxic properties of both these dyes in solution when used in the human organism. For three years past clinical experiments have been conducted at the New Jersey State Hospital, at Trenton, under the direction of Dr. Henry A. Cotton, with the cooperation of Dr. John W. Draper and Dr. John W. Churchman. This work has been confined chiefly to a study of the action of acriviolet as an antiseptic for the colon and has been used largely as a preliminary measure to colon resection.

Acriflavine and particularly neutral acriflavine is less irritating to the tissues than acriviolet, but it has been found that its value as a germicide is not so inclusive as acriviolet, which destroys both gram positive and gram negative aerobic bacteria. For local use in the specialties, except possibly in gastroenterology, acriviolet has replaced acriflavine because of this broader power. The object therefore of my own presentation of the subject at this time is to furnish a preliminary review of the methods and results of administration of acriviolet in gastroenterological disorders. While the use of acriviolet in this manner is undoubtedly subservient to other more generally accepted therapeutic measures, there is no doubt that its physical properties, as above mentioned, render it an invaluable aid to treatment. In order properly to demonstrate the clinical value of the drug, every effort should be made to exclude such simple pathological conditions as tend to return to normal even in the absence of treatment, and we should be wary in accrediting undue merit to the drug when used in these conditions by believing that it has shortened the period of recovery. It is obvious that there can be no adequate control in handling such conditions. The enthusiasms of youth must be checked!

One of the great difficulties encountered in the administration of acriviolet solution to the colon mucosa arises from the fact that the colon tolerates the drug imperfectly. In the average case the highest concentration of the drug which can be used in colon therapy is from 1:25,000 to 1:35,000. The routine administration is as follows:

1. A cleansing enema of soapsuds is given. This is made alkaline if the reaction of the feces is acid.

2. One to two quarts of a 1:35,000 hot aqueous solution of the dye is prepared and introduced into the colon.

3. The solution should be retained as long as twenty minutes, if possible, and then expelled.

This treatment may be given daily or less frequently when indicated. The strength of the solution should gradually be increased up to the limit of tolerance. In a few individuals who have become accustomed to the drug, a strength of 1:10,000 has been tolerated. In this connection the interesting observations of Dr. Churchman upon the effect of the dye in much stronger concentration is worthy of close attention. In the surgical clinic of the New Jersey State Hospital he found after injecting the lumen of an isolated segment of colon exposed during laparotomy with a solution of dye running as high as one per cent. in concentration, that cultures made from this segment, after twenty minutes' contact with the dye, were sterile with regard to aerobic organisms. He qualifies this statement by saying that while the sterility is undoubtedly due in great part to active bacterial inhibition and destruction during the twenty

*Read before the American Gastroenterological Association, Atlantic City, May 26, 1925. This study was aided by a grant from the Andrew Todd McClintock Foundation for the Study of Gastrointestinal Disease.

minutes' exposure, it is possible that it may have been aided by dye carried over into the culture. No permanent damage to the colon could be demonstrated as a result of this procedure. The possibility of the use of the dyes in much stronger concentration in ordinary medical treatment is therefore to be considered.

If it is desired to destroy all the gram negative flora in the colon, irrigations with neutral acriflavine solution 1:6,000 may be employed. Administration of the neutral acriflavine by mouth is accomplished by the use of enteric coated pills. This dye is recovered in the feces and its action diminishes intestinal fermentation. On the other hand, the administration of acriviolet by mouth has not yet been perfected. The drug is irritating to the stomach and its action is very possibly altered by the acid gastric juice. To avoid this complication the administration of acriviolet by means of duodenal catheterization may be highly successful, and its use in this way in some of the case histories hereto appended is demonstrated.

Churchman found gentian violet bacteriostatic for gram positive organisms. He found further that mixing the dyes did not affect the selective bacteriostatic action of either dye. Crossley (2) states that the action of the dye may be chemical. The staining properties of the dyes do not completely correspond to their toxicity. Gentian violet and acid fuchsin stain gram positive bacteria, but acid fuchsin is not toxic to these bacteria. The action of gentian violet is said to be due to a colorless radical of the sulphonol group. Hagen (3) suggests that the selective action may be due to reactions between the ions of the dye and of the bacteria. Churchman has published numerous articles in connection with his experimental work, reference to only one of which will be given here (4). Some of the important facts are the power of the aniline dyes to penetrate into the cells and tissues of the body and into living bacteria; their nontoxicity, as proven by injecting enormous quantities into rabbits without poisoning; their harmlessness when injected into the knee joint. The blood serum of rabbits which have been injected with the dyes shows a bactericidal action which disappears in two hours.

It is perhaps necessary here to mention a few limitations of the aniline dyes. They are not very powerful bactericides and may be impaired by environment and inhibited by serum. The secretions may form a barrier to penetration. Their solution is unstable and should be made fresh every twenty-four hours. The efficiency of gentian violet solution is increased by heat. Acid fuchsin is equally efficient hot or cold. Acriviolet is put up in tablet form, each tablet containing 0.156 gm., which when dissolved in fifteen c. c. hot water makes a one per cent. solution. The powder dissolves readily.

CASE HISTORIES

Case I.—Physician, complaint chronic intestinal toxemia of long standing. He reported good results on himself by altering the intestinal flora and as toxic results a "peculiar and very decided putrefactive odor to the stools." He had been taking four grains of acriflavine or of gentian violet daily by mouth and 1:10,000 solution by enema daily. He reported also muscular and neuritic pains, all of these symptoms disappearing in a few days on discontinuance of the dye. Acriflavine by mouth gave a pale orange coloring to the urine and gentian violet a pale violet shade. It was possible that the patient was using more of the dye than was necessary over a long period of time and that the symptoms were from epithelial irritation.

Case II.—Student, male, aged twenty-three years, married. Complaint, nausea, vertigo and constipation. A previous appendectomy had been performed with temporary relief and improvement. Physical examination showed some abdominal distention, a large liver, tight rectal sphincter, hemorrhoids and fissure. Hemorrhoidectomy was performed immediately. Later radiographs of the colon showed general colitis with poor haustration, dilatation of the transverse colon and severe spasm of the ascending colon and marked colon irritability. Although this case gave no marked colon symptoms the main lesion was in the colon, which was probably an ascending infection from proctitis.

Treatment consisted in antitoxemia diet, autogenous colon vaccines, colon irrigations with acriviolet solution and neutral acriflavine by mouth. The result was very satisfactory.

Case III.—Female, aged forty years, married. Complaint, large amount of flatulence, poor appetite and sleep. In December, 1922, a pelvic operation with removal of the appendix, both tubes and ovarian resection for inflammatory condition, was performed. Following the operation the patient had considerable difficulty with her bowels, a spastic condition of the colon with marked fixation in the pelvis. Chronic colitis and stasis. Treatment had been an antitoxemia diet and autogenous vaccines and acidophilus milk. For six months of this treatment the condition remained stationary. Recently the patient had been given neutral acriflavine in coated tablets, one half grain twice a day. The results on flatulence and general intestinal condition were better than by any previous treatment. The dye was given up to a physiological limit, as shown by yellow discoloration in the urine. The most marked result was the improvement in flatulence, which was effected, at least in some extent, by the acriflavine.

Case IV.—Male, twenty years of age, single. His complaint, constipation with marked toxemia, neuralgic and myalgic pains, general acne and incapacity. The colon showed marked stasis and pericolic adhesions. The treatment consisted in the antitoxemia diet, which was effective for the constipation and the administration of acriviolet solution through the duodenal tube. There was improvement in the acne and toxemia after two weeks' treatment.

Case V.—Female, aged sixty-two years, married. Complaint, chronic intestinal invalid with colitis and colon spasm, multiple focal infection of seven years' duration. The patient had been thoroughly detoxicated but still had colon spasm and neurasthenia. In addition to immunization by autogenous vaccines, a restricted diet had been necessary and the colon spasm was relieved by means of enemata of acriviolet solution. Acriflavine by mouth was very irritating and given up. The patient was especially hypersensitive to milk protein, egg protein, adrenalin and aniline dyes.

Case VI.—Male, forty-three years of age, married. Complaint, loss of energy, long standing constipation, loss of mental poise and marked neurasthenia. There was marked oral infection and extreme toxemia and depression. The radiographs showed colon stasis and right sided pericolitis. Treatment consisted in the removal of the dental infection, but not of tonsillar infection on account of the patient's prejudice to tonsillectomy. Autogenous vaccines of the colon type were of great value in the early treatment, also neutral acriflavine by mouth and acriviolet irrigations by rectum. The patient was very sensitive to both, acriflavine being substituted in strength of 1:6,000 for irrigations. However, the treatment was continued with excellent results.

Case VII.—Male, thirty years of age. Complaint, lowered efficiency and vitality; secondary tendency to constipation and gas. The patient had had stomach upsets for fifteen years with rapid pulse, flatulence and slight constipation, nervousness, pains, phobia and insomnia. X ray examination of the colon, 1924, showed a large redundant colon with low grade inflammatory changes particularly on the right side. Here there was an inseparable coil at the hepatic flexure. The stools were putrid with a great amount of trichomonas intestinalis. The patient had hemorrhoids and tight sphincter. The first treatment was hemorrhoidectomy. He was then placed on an antiputrefactive diet and large doses of thymol in the supposition that the trichomonas in such large quantities in the stool might be pathological. He was given autogenous colon vaccines. The colon was irrigated with acriviolet solution 1:35,000. Gradual improvement with the disappearance at times of the trichomonas followed the irrigations with the dye. Severe reactions followed the vaccines.

After six months of this treatment there was marked physical, mental and nervous improvement with corresponding improvement in the appearance of the colon as shown in the lantern slide. In addition to giving acriviolet by rectum, fifty c. c. of a 1:1,000 solution of the dye (0.052 gm.) were given by duodenal intubation. Seventy-two hours later, the dye was recovered in the feces and there was no trace of trichomonas. This method of administration of acriviolet solution has been tolerated by the patient. As a result the stools have been much larger, well formed and contained about twenty-five per cent. less bacterial flora. Physical well being has followed in exact proportion to the improvement in pathological findings.

It is not intended as yet to draw conclusions as to the therapeutic value in the intestinal tract of these dye substances as the therapeutic experience is limited. The results so far are favorable and show a very low grade of toxicity if any. Further studies will be published.

I wish to acknowledge my indebtedness to Dr. Churchman, not only for his extensive experimental studies upon the action of the dyes on bacterial life both inside and outside of the body, but also for his aid in the preparation of this article. I also acknowledge the invaluable aid of Mr. Michael Turpak, of the Andrew Todd McClintock Memorial Laboratory, in conducting the routine laboratory research work.

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Gastrointestinal Manifestations of Food Allergy*

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In the past few years medical literature has been filled with articles on asthma and hay fever and their relation to protein sensitization. Only occasionally, however, has there been any reference to the equally definite and often more distressing manifestations of allergy in the gastrointestinal tract. Sensitization or allergy is closely related to the problem of immunity and anaphylaxis, both in principle and in manifestations. As long as the tissues of the human body are able to produce an antibody (probably really a tissue enzyme), to destroy or change a certain protein, living or inert, so that it does not act as a poison to the tissues, that individual is "immune" to that protein. When certain tissues become sensitized to the protein, these tissues will be affected, either showing a noninflammatory reaction (hyperemia) in the case of the inert protein, or an inflammatory reaction (infection) in the case of the living bacterial protein. Again, a sudden severe allergic reaction corresponds to an anaphylactic reaction, and protein desensitization is accomplished in the same manner, and produces the same results, as active immunization.

In the case of infection, it is not plain as yet whether antibodies are made in some one organ or tissue of the body, or whether each separate tissue must produce its own antibodies, but that the latter is the case seems probable from the fact that certain strains of bacteria seem to have a predilection for certain tissues, or in other words that certain tissues are susceptible to certain bacteria. In the case of allergy this "selectivity" has long been recognized, it having been demonstrated that different tissues may be sensitive in varying degrees to the same or to different proteins. Thus, in the same individual a sensitization of the nasal mucosa to pollens may produce hay fever, of the bronchial mucosa to some emanation, asthma, of the skin to a vine or shrub, erythema or vesiculation, or of the gastrointestinal

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mucosa to a food protein, spasm or angioneurotic edema of this tissue.

The mechanism or chemistry of allergy is no more understood than that of immunity. The same theories and nomenclature applied to one can be applied to the other. Further confusion has been caused by the demonstration that identical reactions can be produced from inorganic substances, such as metals and drugs, and even from physical agents, such as light, heat, cold and mechanical irritation. A complete revision of our theories of immunity is in order.

The question whether it is a whole unchanged protein which causes the allergic reaction, as has for so long been held to be the case, is still an open one. It was held at one time that true food allergy could only occur where a gastric achylia was present, thus permitting unchanged protein to be absorbed. Yet in my group of cases, only twenty per cent. showed an achylia, and the symptoms of these did not differ from those in cases showing a normal or very high acidity. It has been suggested that the reaction may be due to some split protein or protein derivative, perhaps related to histamine, and that the whole problem is very closely bound up with the endocrine system, especially with parathyroid function and with calcium metabolism. The effects noted in asthma, in tropical sprue, and other allergic conditions, from calcium and parathyroid or adrenal therapy, help to sustain this contention.

It has been recognized, almost from time immemorial, that certain foods would cause certain untoward gastrointestinal reactions in certain individuals. The "gas" produced by certain legumes, the diarrhea following the eating of lobster, the vague uneasiness after drinking much buttermilk or cider, have been personal experiences to which many of us have been subjected. Individuals have often realized the specificity of the reaction in regard to certain foods. Careful observation of many of the more marked cases has led to a revision of previously conceived notions in regard to the frequency of this disease. In the first place it has been found that allergy is a hereditary condition, being transmitted in close conformity to the Mendelian law of heredity. While allergy in general, however, is thus transmitted, the same tissues need not necessarily be sensitized in different members of the family, nor need the proteins be the same. It is generally true that an individual is usually sensitive to more than one protein and that more than one group of organs is sensitive to the same or to different proteins. Thus, in a family that I have studied the father has had fever, asthma and chronic eczema; the mother, diarrhea and migraine; the daughter eczema and diarrhea, and the son, hay fever.

GASTROINTESTINAL MANIFESTATIONS OF ALLERGY

The gastrointestinal manifestations of allergy are various, and are said to be caused in two ways: first, by direct irritation of the gastrointestinal tract from the presence of the offending protein within its lumen, and secondly, as a part of a general allergic reaction due to absorbed protein. In most cases both factors probably play a part. Direct irritation would be the cause of the vomiting or diarrhea, or both, following sooner or later after ingestion of the protein, and of other irritative symptoms, ranging from an unpleasant uneasiness or "gassy" sensation all the way to the severe spasms, resembling biliary or renal colic or intestinal obstruction. As a part of a general allergic reaction, and associated with similar manifestations in the skin or bronchopulmonary tract, would be classed such conditions as purpura, urticaria and angioneurotic edema, which have been repeatedly shown to occur in the mucosa of the gastrointestinal tract. It is highly probable that many of the symptoms formerly attributed to intestinal toxemia, and rapidly relieved by a meat free diet, have really been due to sensitization to some meat protein, especially as the observation was frequently made that such symptoms as headache, nerve pains, coughs, and skin eruptions would often occur too soon after eating meat to be accounted for by the elaborate process of decomposition and final tissue absorption.

DIAGNOSIS

The diagnosis of food allergy is often difficult. Gastrointestinal manifestations may resemble so closely those of practically any of the organic lesions of the gastrointestinal tract, that the first requisite is a complete gastrointestinal study, including all laboratory and röntgenological examinations, to rule out such organic lesions. It must be recognized, however, that allergy may exist coincident with organic conditions, in fact, that the irritation and lowering of the resistance of the tissues caused by allergic reactions, may be a factor in producing gastrointestinal infections or neoplasms. Also, sensitization to bacterial proteins, that is, susceptibility to certain forms of bacterial infection, is a frequent accompaniment of allergy.

Due to the fact that allergy is hereditary, a history of allergic manifestations in the patient's parents or family is suggestive. As mentioned before, while the patient may exhibit gastrointestinal symptoms only, the parents or brothers and sisters may show other manifestations, such as asthma, hay fever, urticaria, chronic eczema or migraine. In the individual, a history of previous or coincident manifestations in other tissues than those of the gastrointestinal tract is very helpful. Hives in earlier life, bilious headaches, frequent coryza, especially in summer, asthma, angioneurotic edema, eczema, epilepsy, or other known or suspected allergic phenomena, should create a suspicion that the patient's gastrointestinal symptoms may also be due to protein sensitization.

SYMPTOMS

The symptoms of protein sensitization of the digestive tract are due to reactions in this tract comparable to those in other tissues, and are in the main of two types, mucosal and neuromuscular. The mucosal reactions, ranging from mere hyperemia to angioneurotic edema, may cause symptoms varying from a vague uneasiness or feeling of fullness, often attributed to gas and accompanied by aerophagia, to actual obstructive symptoms where the swelling has occluded the intestinal lumen. Cases of the latter type are occasionally subjected to operation, the surgeon either discovering no signs of obstruction or observing a general edema of the bowel, disappearing rapidly during manipulation. The mucosa of the mouth and pharynx shows reactions in the form of canker sores or of angioneurotic edema, the latter a

serious condition, especially if associated with edema of the larynx. The anal and rectal mucosa may exhibit the typical reactions, the condition often resembling a severe proctitis, and in fact, due to the infective material in the lower bowel, often resulting in actual ulcerative proctitis, sigmoiditis and colitis. Pruritis ani is often due to allergy. Bowel hemorrhages, often quite extensive, and resulting from surface oozing or from mucosal denudation or ulceration, are occasionally seen.

Of the neuromuscular reactions, the symptoms due to spasm are often confusing, and it is in cases of this type that many futile operations are performed as a result of insufficient study. Spasms of the pharynx, larynx, or esophagus, often attributed to and unrelieved by operation for various nose and throat conditions, are frequently of allergic origin. Spasms of the stomach and bowel, especially marked at the areas of more marked irritability, such as the pylorus, ileocecal region, transverse colon, pelvic colon and rectal sphincter, may cause symptoms varying from a sensation of "peristaltic unrest" to severe colicky pains, which with tenderness, due to the mucosal reaction, may closely resemble biliary, appendicular, renal or intestinal colic. Such cases are frequently subjected to multiple operations, the colicky attacks of course persisting after each operation. Milder spasms may merely induce reverse peristaltic waves, and cause such symptoms as epigastric fullness, heartburn, sour regurgitation or vomiting. Increased peristalsis, manifesting itself in diarrheas, acute or chronic, the latter often followed by rectal complications such as hemorrhoids, is one of the common allergic reactions.

While many or all of the symptoms just mentioned may also be caused by organic conditions, a suspicion that they may be due to allergy should be aroused if they show certain characteristics. First, we may suspect allergy if the symptoms occur at irregular intervals, not explainable on any other basis, and possibly with a history of variation from the usual dietetic habits just preceding the attacks, or coincident occurrence of other allergic manifestations, as, for instance, where urticaria, vomiting and diarrhea may follow the eating of a fish dinner. Secondly, if the symptoms occur on certain days of the week, especially in persons of methodical habits of eating, or in individuals living in institutions where the same foods are served on the same day each week, sensitization to one of these foods may be suspected. An example of this is seen in patients who have a headache and vomiting attack or diarrhea every Monday morning attributed to underexercise and overeating on Sunday, but really due to some article of food not eaten on weekdays. Third, sensitization is proved in cases in which the patient has discovered for himself that certain foods in large quantities may cause marked symptoms, and so has contented himself with small amounts of these foods each day, as, for instance, in cases where the individual knows that a glass of milk will invariably "act as a cathartic," but does not suspect that the milk used in his beverages, cereals and puddings is causing his heartburn and abdominal cramps.

Examination of a patient with allergy does not show anything characteristic except in cases where some of the skin or mucosal manifestations mentioned before are visible. In some cases the patient is well nourished, in others emaciated to a point suggesting malignancy. Various organic lesions may be found, but as said before these do not exclude the coexistence of allergy. The blood count, especially during the attacks, may show a marked eosinophilia, and eosinophile polymorphonuclear leucocytes have been seen in large numbers in the mucus obtained from the bowel of diarrheal cases. Gastric analyses may show an achylia, although this was true in only about twenty per cent. of my cases. Gastrointestinal x ray study, in the absence of any organic findings, may show the presence of various unexplainable spasms (cardiospasm, pylorospasm and colonospasm) or of disturbances of motility, usually hypermotility.

SPECIFIC TESTS

The specific tests for the determination of food allergy are of two kinds, dietetic and dermal. The dietetic test, really the only absolute test for gastrointestinal allergy, has for its object the discovery of certain foods which when taken by the patient will invariably produce the symptoms complained of, and when withheld will result in more or less complete relief, depending on the amount of organic change caused by long continued allergic irritation.

There are two ways in which effects of diet may be studied. In well nourished patients, all food may be withheld for three days, the patient being given only water or a rice and water diet—the old Bulkeley diet. If due to food allergy (and not to rice), the symptoms should disappear or be markedly alleviated, and a careful written record of the results of adding one or more articles of food to the diet on successive days will disclose the food or foods to which the patient is sensitized. The other method consists in having the patient keep on a fairly full diet, but to vary the foods taken to as great a degree as possible, especially those taken just preceding an attack of the symptoms suspected of being of allergic origin. A detailed daily record of the diet and symptoms, showing the time and character of the food eaten and the time of onset and duration of symptoms, will in from two to four weeks almost invariably establish the identity of the offending foods. In the cases where the allergic reaction is continuous or occurs every day, the symptoms being due to some common daily article of diet like milk, egg, or wheat, dietetic study is more difficult and dermal tests are more helpful. The dermal tests also have the advantage of consuming less time.

DERMAL TESTS

The dermal tests depend upon observing the reaction of the skin to various purified proteins. While in very sensitive persons, the mere application of certain proteins to the skin surface may produce a reaction, it is necessary to get more definite information, to introduce the protein through the outer layers of the skin. This has been accomplished in two ways. The first method consisted of scarifying the skin, rubbing an alkalinized solution of protein into the scarified area, and observing the reaction, the development of an urticarial wheal about the area indicating sensitization. The other method, which in recent years has entirely supplanted the first, consists of the endermic (intradermic) injection, by means of a hypodermic needle, of sterile solutions of

purified proteins, a positive reaction consisting of the development of an urticarial wheal with pseudopod-like projections from its edges.

The purified proteins may be very simply prepared in any well equipped laboratory or may now be obtained from a number of reliable pharmaceutical houses. As many as two hundred proteins are used by some clinicians in testing for sensitization. In most of my cases the proteins were prepared and applied by Dr. R. H. Bennett, of Brooklyn. It must be remembered that not all persons with gastrointestinal sensitization will show an equal degree of skin sensitization, so that mild or even absent skin reactions do not necessarily indicate mild or absent gastrointestinal sensitiveness. The dietetic test is the final criterion of gastrointestinal sensitization.

TREATMENT

The treatment of gastrointestinal allergy consists of treating the patient during an allergic reaction and of using measures to prevent future attacks. With the onset of the reaction, it is desirable to remove as much as possible of the offending protein from the gastrointestinal tract by lavage or induced vomiting and by catharsis. For the actual relief of symptoms, adrenalin chloride solution, 1 to 1,000, given intramuscularly or sublingually in ten to fifteen drop doses, will frequently act with great rapidity. Pituitrin is said to produce a later but more lasting effect. Calcium salts in large doses, such as a heaping teaspoonful (eight grams) of calcium lactate, will enhance and prolong the effect of the adrenalin. The calcium should, of course, be well diluted with water. Belladonna or atropine occasionally relieves the spasms, but these drugs are not to be compared with adrenalin in this respect. The reason for this effect of adrenalin is not known, but its efficacy in asthma, urticaria and other allergic manifestations has long been recognized.

To prevent allergic reactions, the only certain method of treatment is to remove the offending protein or proteins from the diet. This is easily accomplished in the case of foods which are only occasionally used in the patient's diet, such as berries, condiments, shellfish or even ordinary meats, fruits and vegetables or beverages. But where the patient is sensitized to such common articles of food as milk, egg or wheat, it is not only a great hardship, but practically an impossibility, to follow a diet with these proteins eliminated. In these cases desensitization must be attempted.

DESENSITIZATION

Desensitization may be accomplished in two ways. The specific method consists of either the oral or hypodermic administration of increasing doses of the offending proteins. In gastrointestinal allergy the oral method is to be preferred. In some cases hypodermic injections may be given at first and then followed up with increasing doses by mouth, but I have found the oral method entirely satisfactory. In the case of milk, the first dose by mouth should be one drop a day, which should be increased at first a drop at a time and then more rapidly as the daily dose becomes larger. Within a month a patient can thus be brought to a point where sufficient milk may be taken to make beverages and cereals palatable, or to permit of the taking of small quantities of desserts containing milk. Egg must be started in much smaller doses, many of the failures in oral desensitization being due to too large an initial dose. I have usually started with a teaspoonful of a solution of one drop of beaten egg in a glass of water, and have gradually reached a point where a whole egg a day could be tolerated. In the case of wheat, the flour may be made into a solution by boiling, and similarly administered. It is useless to desensitize a patient to occasional or seasonal foods, as it is a fact that unless the protein is taken daily thereafter, sensitization will rapidly recur. It is therefore only worth while to desensitize to milk, egg, wheat or potato, all of which may be taken each day without becoming distasteful.

Nonspecific desensitization, much heralded, especially in France, while it would be an ideal method if successful, has not in my hands proved to be the panacea it was supposed to be. This method is based on the theory that by the intramuscular or intravenous injection of a foreign protein the resistance of the body to all proteins may be raised. It is essentially the same as nonspecific protein therapy of chronic infections, and consists in the injection of vaccines, peptone solution or other proteins into muscles or veins. The dose may be such as to cause a general reaction—chill and fever—or may be minute, and increased at three or four day intervals until large doses may be given intravenously without general reaction. A general reaction is probably desirable, cases having been reported where complete desensitization to food proteins has been produced by one severe reaction after an intravenous dose of colon bacillus vaccine. My experience with the nonspecific method has been disappointing, the patients getting only temporary relief following the injections, even in cases where fifteen or twenty injections have been used, with the dose of peptone up to 2.5 c. c. of five per cent. solution intravenously.

ENDOCRINES

Endocrine therapy has been tried, and in some cases has been found to be successful. The continued administration of adrenal or pituitary extracts to prevent allergic attacks is not satisfactory nor advisable. Parathyroid therapy, using doses of one tenth grain of the gland, has in some cases seemed of value, especially where combined with the administration of large doses of calcium. I have used as much as a heaping teaspoonful (8 grams) of calcium lactate, well diluted with water, three times daily.

CASE REPORTS

Case I.—M. O., female, a housemaid, twenty-nine years old, nineteen years previously had had severe epigastric pain attacks every few months for several years, each attack lasting a few hours. Subsequently she had noises in her ears and later pains in her joints and neck. Three years previously she had had a few recurrent attacks of the old pains, very severe and associated with a rash, vomiting and dizziness, and followed by a brief diarrheal period. After nine months of these attacks appendectomy had been performed, and subsequent to this she had an attack of urticaria. She had then had a few abscessed teeth and badly diseased tonsils removed. She had then become constipated and had begun to have attacks of obstipation lasting three days and associated with

vomiting. The anal sphincter had been stretched for spasm and this had been followed by a cholecystectomy. The surgeon reported that the colon had looked thickened and diseased at operation, and suggested its removal if symptoms persisted. Following this operation severe attacks of epigastric pain, vomiting, and dizziness, accompanied by diarrhea, occurred. Examination showed nothing abnormal except eight pulpless teeth, which were removed at once. No other focal infections were found after thorough study by experts. Blood, urine and stool examinations were negative. Gastric analysis (fractional) showed a reflex continued secretion, good motility, and blood in all specimens. X rays were negative except for evidences of moderate gallbladder adhesions.

During the study of this case angioneurotic edema of the face and neck occurred coincident with several very severe pain attacks, and both symptoms were promptly relieved by adrenalin. Skin sensitization tests, confirmed by repeated dietetic tests, showed positive reactions to apple, peach, plum, milk, cheese, eggs and oysters. Withdrawal of these foods from the diet resulted in a cessation of the attacks, but nonspecific protein desensitization was attempted, twelve intravenous injections of peptone, in increasing doses up to two c. c., being given. This treatment resulted in some general improvement, but did not provide immunity to the offending proteins. Later oral desensitization to milk gave marked relief and the patient is now free from attacks and is taking up training as a nurse.

Case II.—E. J., female, housewife, forty-five years old, first seen by me in 1917, had been well until an attack of diphtheria eight years before had left her with a weakened heart. For five years she had had frequent attacks of severe abdominal cramps, usually associated with diarrhea, and milder attacks of gas, a moving feeling in the abdomen and occasional canker sores. Examination showed nothing abnormal beyond a slight nasal obstruction, small reddened tonsils and canker sores. Laboratory and x ray findings were negative, but food protein skin tests showed marked sensitization to peas and mild to milk. Dietetic study also revealed sensitization to grapes and spinach. Oral desensitization to milk and avoidance of the other foods resulted in relief of symptoms.

This patient has been seen off and on ever since 1917, has had a hysterectomy for fibroids, dental extractions and tonsillectomy for chronic gastrointestinal infection and chronic arthritis, and still gets gastrointestinal symptoms, but no diarrhea, from peas, cheese and grapes.

CONCLUSIONS

1. Gastrointestinal manifestations of food allergy are frequently overlooked and patients uselessly subjected to multiple operations.

2. Gastrointestinal manifestations are due to direct irritation of the mucosa or are part of a general reaction.

3. The diagnosis is made by a study of the history and by dietetic and dermal tests.

4. The treatment consists of the alleviation of the severity of the attacks and the withdrawal of or desensitization against the offending proteins.

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The report of another case and a bibliography will appear in the author's reprints.

Cases in Which the Test for Pancreatic Efficiency Has Been of Clinical Assistance

Clinical Report No. 1

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A test for estimating the enzyme activity of pancreatic juice (1) was suggested by one of us, which is accurate, inexpensive and easy to perform. By using the A fraction of a socalled medical bile aspiration, a five per cent. peptone solution being used as the stimulant, a knowledge of the storage factor of the gland and its enzyme potency can be obtained for diagnostic purposes. A few cases are presented in which we feel it furnished us with clinical data worthy of mention. The cases are described briefly, all of the irrelevant points in the history and examination being omitted.

Low grade pancreatitis from chronic gastroduodenitis. Value of the pancreatic test in suggesting therapy.

Case I.—Mrs. A. L. The patient was referred by Dr. J. T. Travers, New York, on May 12, 1924. She was a housewife, aged thirty-four, married, and had two children. Her family and personal histories were not significant, except that the gallbladder and appendix were removed three years ago after a year of symptoms of indigestion. Tissue diagnosis was chronic cholecystitis and chronic appendicitis.

Her present illness began after the birth of her last child four years ago, with belching, a metallic taste, coated tongue, and abdominal distress after meals (usually two or three hours) which was sometimes painful and radiated into the back. She ate little because of this distress. She said that for one year after the operation she was distinctly better and then all the former symptoms returned.

The report of the x ray examination by Dr. Travers showed no six hour gastric stasis, a hypertonic stomach, no fixation, and a tender duodenum; a diagnosis of postoperative adhesions was made. He also reported albumin in the urine. The physical

findings were separation and distortion of the teeth suggestive of pituitary disturbance, dry and badly coated tongue, and a normal pelvis. The patient was well nourished. Laboratory findings: Ewald test meal, 20 c. c. return, free HCl 0, total acidity 20, mucus xx, slight free blood, negative Boas-Oppler, lactic acid and Wolff-Junghans. Urine negative except for a trace of albumin. Bile aspiration, A fraction, color normal, clear, mucus x, pus x, Bassler test 6 units. Diagnosis, hypopituitary type, chronic gastritis and duodenitis, hypopancreorrhea (2). Treatment, anachlorhydric diet, enteric coated capsules each containing one gr. of pancreatin and soda bicarbonate.

Progress notes: Treatment began on May 16th and on May 26th the patient reported relief of all symptoms except that the capsules tended to constipate her. This was relieved by an occasional alkaline saline purgative. She was discharged on June 5th and has felt well since.

Comment: This case suggests that not much was wrong with the gall tract and that the chronic duodenitis caused the hypopancreorrhea by some interference with the gland's function. While it is well known that an achylia is often improved by this type of diet and alkaline pancreatic powders, usually in achylia the pancreas is efficient until very late. What the Bassler test proved, however, was that a pancreas may become "low" in these instances and in giving these powders and using the test one can prove whether it is only functional or organic.

Chronic cholecystitis in which the low pancreatic efficiency in the test suggested disorder of the pancreas and a discussion of the advisability of an operation.

Case II.—Mrs. J. H. N. The patient was referred on October 14, 1924; she was sixty years of age, married, no children. Her family history was negative, her father and mother died at advanced old age. Her personal history was not significant. She said she had had attacks of indigestion for about ten years off and on. After eating, the upper abdomen became distended and there was a marked sense of weight and pressure. These attacks were accompanied by excessive belching of gas, and were present in the midmeal intervals. At times, independent of meals or the presence of indigestion, she had dizzy spells. She said that since the illness of her husband about four months before, the gastric distress became much worse, which she thought was due to mental and physical strain. She had practically no desire for food, her feet and hands were constantly cold, she slept fitfully, and had lost about ten pounds in weight in the last six months. She was moderately constipated.

Physical examination showed a poor condition of teeth but no oral sepsis. The blood pressure was 140/100, and there was a distinct arteriosclerosis. The liver was stiff and large, mainly on the left side, the surface being smooth and the edge not palpable. There was tenderness on pressure in the epigastric region, this being exquisite over the gallbladder. X ray examination was negative as to stones and visibility of the gallbladder, and the other matters not significant. The urine contained a slight amount of albumin and a few granular casts. The bile aspiration on October 16th showed: A fraction, 30 c. c. return, yellow, clear, mucus xx, no pus, Bassler test six units; B fraction, 70 c. c. return, brownish, clear, mucus xx, pus xxx, a few cholesterin crystals, and no bacteria of note; C fraction, 20 c. c., yellow, clear, no mucus, no pus.

The diagnosis made was slight grade of chronic cholecystitis, hypopancreorrhea due to arteriosclerosis of the pancreatic arteries, and a slight grade of arteriosclerotic kidneys, with a neurosis. Treatment consisted of an arteriosclerotic diet of no meat, eggs, fish or fowl, ninety grams of vegetable protein a day were permitted; with a limited amount of foods and generous in selection; small doses of iodides; the gallbladder pills to be mentioned later; gradually increased amounts of walking; hot packs twice a week; a citric acid, soda bicarbonate, and pancreatic tablet after meals. No bile aspirations were done as treatment, as the patient said that the first tubing "knocked her out" for several days, probably because she was so nervous at the time, and on the second attempt this was repeated with difficulty.

Progress: Subsequent history notes through October and November showed modifications in treatment here and there. A tonic consisting of a tincture nux vomica and glycerophosphates was added in mid November and on December 2d the patient said that she felt perfectly well. She showed distinct improvement in her appearance and manner, the tenderness over the gallbladder had markedly subsided, but the liver was not changed. A Bassler test was done on December 18th, with a reading of six units.

Comment: The low pancreatic reading at the first examination in the presence of marked arteriosclerosis strongly suggested a hypopancreorrhea from diseased vessels in the pancreas for which no definite result could be obtained from operation in the advanced state of the vessel disorder, even if a cholecystectomy were done. The marked condition in the liver also led to the same conclusion. There was a moderate degree of general improvement on medical treatment but the pancreatic test showed that the low pancreatic function was permanent because of the diseased vessels.

The following is a case of hypopancreorrhea due to gallbladder pathology, with stiffening of the pancreas found at operation. Test readings were made before and six months after operation.

Case III.—Mrs. J. M. McA. The patient was referred by Dr. A. N. Lyons, January 17, 1924. She was forty-seven years of age, married, with three children. The family history was not important. The past history included pneumonia at twenty-two, typhoid at thirty-five; otherwise irrelevant. The present illness was as follows: After her second child was born she began to have an indefinite form of indigestion, which was promptly relieved by a saline cathartic and an occasional dose of sodium bicarbonate. After the birth of her last child, with which there was no digestive distress, she began to have sharp attacks of gas, distention, and distress, usually after meals, but at times independent of them. A constipation lately became more marked, and she was often troubled with a distended feeling in the abdomen, which was relieved by passing gas. This had awakened her at night a number of times, and, although relieved, she could not sleep afterward. Four weeks previously she had an attack of sharp pain

in the centre of the abdomen "under the ribs," requiring morphine for its relief. The next day the pain returned, although milder, and was relieved by an electric pad. Since then there had been a soreness in the upper abdomen and the patient was afraid to eat. She often felt a chilly sensation in the back.

The physical examination showed a large, well nourished woman. The left lobe of the liver was palpable, there was tenderness on pressure in the epigastrium, and perhaps more on the right side than left of the midline. The blood pressure was 147/97. Laboratory examination showed urine negative except for high calcium oxalate crystals; and the feces acid, gassy, with high gram positive double cocci and Bacillus welchii. The Ewald test meal return was 90 c. c.; free HCl, 46; total acidity, 64; combined HCl, 56. The blood chemistry was urea nitrogen 14; sugar, 0.12; creatinin, 1.5; cholesterol, 0.24. The Lyon test corresponded to negative in a diagnostic way. The Bassler test reading was four units. The röntgenographic examination showed a small high stomach, the pyloric end hugging the under surface of the liver, and positive gallstones, seven in number, the gallbladder situated high. Ileal stasis xx; there was spasticity of the colon with fibrillary contractions of the transverse portion.

The treatment was a cholecystectomy. Progress: At operation on January 29, 1924, a gallbladder about normal in capacity and containing stones was removed. The walls were thickened and the organ contained thick dark bile. The sac was attached by adhesions to the under surface of the liver, duodenum, and a dense band near to but not touching the hepatic flexure of the colon. Extensive separation was necessary to remove the organ. The head of the pancreas was definitely thickened and stiff. The patient made rather a stormy recovery in the first ten days, running a temperature for a week; she had much pain for five days, became anuric for two days after the operation, and required catheterization for four subsequent days; a cystitis then developed. However, toward the end of the second week she improved smoothly, and got out of bed on the twenty-fourth day. She left the hospital on the thirty-second day after the operation. The result from the operation was most satisfactory. She was relieved of her digestive symptoms in about two months. On April 3rd, a Bassler test was done that showed eight units, and another on May 19th, which showed fifteen units. An x ray on May 27th showed no ileal stasis, but still some spasticity of the colon. The bowels were regular.

Comment: This is the common enough picture of a long neglected pathological condition of the gallbladder, with stiffening of the pancreas from that pathology, a low unit reading at the time, and a normal unit content about three and a half months after the operation. Evidently the stiffening of the pancreas was reduced (congestion) by the removal of the gallbladder, the organ resuming a normal function. With this the ileal stasis was overcome, the bowel function also improving. The test here proved of value in diagnosing an involvement of the pancreas before operation and its subsidence in a few months.

Two cases of pathological conditions in the gallbladder, showing improvement on medical treatment, are reported herewith.

Case IV.—Mrs. J. A. The patient was referred by Dr. J. F. Donnelly, of Philadelphia, on May 8, 1924. She was a housewife, aged forty-two, married, with three children. The family history was not significant. The personal history was negative with the exception of a cholecystectomy for gallstones four years before, by Dr. Thorek, of Chicago. The present illness began as follows: After a cholecystectomy was performed the symptoms present before and at the time of the operation continued, growing gradually more pronounced. About one year ago a rather typical ulcer syndrome began, which was now quite characteristic in all its features. About three months before this, the pain became continuous, was more marked two hours after a meal, but was not relieved on taking food or alkalies. The deduction from an x ray examination made about two months ago was the definite diagnosis of ulcer, and operation was advised.

Physical examination was essentially negative, except that the pupils were contracted and fixed, the mucous membranes were paler than normal, and there was a tenderness on deep pressure in the left inguinal region, also a generalized tenderness on deep pressure up and down the right abdomen. The laboratory examination showed, Ewald test meal return, 50 c. c.; free HCl, 5°; combined HCl, 15°; total acidity, 38°; otherwise normal. Blood hemoglobin, 64 per cent.; red and white blood cells, normal. Bile aspiration done on May 15th produced A fraction, 95 c. c., yellow, turbid, mucus xx, pus xx, Bassler test reading of seven units; B fraction, 65 c. c., darker yellow, clear, mucus xxx, pus xxxx, heavy pure culture of staphylococcus; C fraction not determinable. The urine and feces were negative. Deductions from an x ray examination were gastric hypermotility, gastrospasm, ileal stasis xxxx, otherwise negative.

The diagnosis was infective cholangitis and hypopancreorrhea. The treatment consisted of hypercholesterinemic diet given May 20th, together with Carlsbad salts in the morning, soda bicarbonate and pancreatin, one grain, three times a day after meals, autogenous staphylococcus vaccine, a daily walk of three miles, medical bile aspirations of alternate peptone and magnesium sulphate solution stimulations every second day, that is, each stimulant every fourth day. Progress: There was a steady subsistence of symptoms; all pain was relieved in the second week. There was an improvement in the bile fractions as to mucus, pus, and bacteria. The Bassler test at subsequent times showed in units as follows: 7, 7, 9, 12, 10, 12, 14, 16, 16. On June 19th the bile aspirations were stopped and monthly bile aspiration since showed marked improvement with high normal pancreatic readings. A few staphylococci continued in the B fraction or what was judged to correspond to it. The medication was stopped after the ninth day from the beginning of the treatment, and a short run of organic iron tonic was given for two weeks. At the last note, January 23, 1925, the patient reported herself perfectly well, still taking the walks, not following the diet, and taking Carlsbad salts about once each week. The vaccine was discontinued in the tenth week from the beginning of the treatment.

Comment: This case suggests that a low pancreatic

activity can and often does give symptoms of gallbladder pathology. In our records, fifty-two per cent. of cholecystectomies done where no stones are present return with essentially the same symptoms as before operation. This is based on a group of 319 cases. Adhesions and other conditions not diagnosed or impossible of good treatment, no doubt account for some cases, but in the majority a deficient pancreatic activity is the important factor in their production. The steady bile drainages here were, no doubt, helpful and the other medical treatment assisted. We believe that the drainages rather than the vaccine were of most assistance in diminishing the infection because the improvement started long before the vaccine could have brought any improvement and the staphylococci continue present in the bile. Since more cases of "stiffening of the head of the pancreas" are present in cholecystitis without stones than in instances of cholelithiasis it is probable that this condition of the gland is due more to infection of the ducts and duodenum than the gall sac itself. It seems logical to believe, although no operation was done, that at least a congestive condition of the head of the pancreas existed and that with its improvement from the treatment the head of the gland, which makes up two thirds of its bulk, took on a more normal function with a rise in the pancreatic efficiency and a marked improvement in the case which the Bassler test could prove throughout the course of treatment.

Case V.—Mrs. E. G. The patient was seen March 26, 1924. She was a widow, with no children, a dressmaker. Her family history was not significant. Her personal history consisted of an inflammation of the bowels twenty years before, following the removal of a tumor, nature unknown. The patient was at the time of the visit fifty-five years old, and she had menstruated regularly up to seven years before. Fifteen years before she had several attacks of pain in the epigastrium, which were diagnosed as gallstones. She went to Carlsbad where she stated she was cured. For many years she had attacks of vague pain in the upper right abdomen, and had been unable to take much food without great distress. For the past year she had not eaten any solid food, and could only tolerate milk within the last six weeks. She was constipated and nervous and troubled with gas in the stomach. The physical examination disclosed an asthenic type of woman with hypertrophied tonsils from which streptococci were cultured, considerable crossed sex characteristics, and a marked tenderness on pressure over the gallbladder. The x ray examination showed the presence of negative gallstones, with marked tenderness on pressure over the gallbladder.

The laboratory reported that the urine and stool were negative. A bile aspiration, May 1, 1924, showed A fraction 120 c. c., golden yellow, clear, mucus xxx, pus xxx, Bassler test two units of pancreatic efficiency; B fraction 180 c. c., light yellow, turbid, mucus xxx, pus xxx and clumps of bilirubin. The diagnosis was cholelithiasis, hypopancreorrhea due to stiffening of the head of the pancreas from the gallbladder disease. Operation was refused, and treatment was given in a sanatorium for two weeks with continuous gall duct drainage, the stimuli used being magnesium sulphate, olive oil, dilute HCl and peptone solutions. The daily output of fluid was always satisfactory. After the tube had been out for a week, a bile aspiration was done, giving A fraction 50 c. c., light yellow, clear, mucus x, no pus cells, Bassler test eight units; B fraction 95 c. c., golden yellow, clear, mucus x, few pus cells. Bile aspirations were kept up for ten weeks, twice weekly and once a week until October 26th. In all of these the pancreatic unit figure was eight. Additional treatments during the interval were Carlsbad salts and hypercholesteremic diet.

Progress: On June 19th the patient reported herself as well, and as not having had any symptoms after the second week out of bed. This has continued up to the present; she has gained twelve pounds in weight since treatment.

Comment: This case seemingly proves that, even with gallstones present and a long history of them, medical drainage of the bile passages may be helpful and beneficial in restoration of the pancreatic condition due to stiffening of the head of the gland from their presence or an attendant infection. The fact that the stones continue present probably accounts for not obtaining a higher unit content than eight which may be designated as the low normal, or it may be due to permanent sclerotic changes due to the long duration of the primary biliary tract disease which, according to the history, extended over at least fifteen years.

The following case is of chronic cholecystitis getting worse during treatment, warranting cholecystectomy and the pancreatic test as a guide in judging this.

Case VI.—Mrs. A. M. C. The patient was referred by Dr. Adams, of Whitestone, Long Island, September 12, 1924; widow, aged sixty-two, no children. Family and personal histories were negative. The present illness began about February, 1923, when foods commenced to cause distress; this gradually grew worse, when a pain developed in the upper right abdomen. The patient at first thought she might have strained her side, because the pain came on quickly; she said she thought she had a fever for a few days. The soreness of the right side continuing and the gastric distress becoming worse, Dr. Adams considered the possibility of gallstones. An x ray examination was made in June, which was negative as to proving the presence of gallstones. The patient had had a nocturia two to three for years, but many examinations of the urine did not prove anything.

Physical examination showed a well nourished and proportioned woman, blood pressure 140/90. The examination was negative with the exception of a marked stiffening of both lobes of the liver and a distinct tenderness on pressure in the median fissure. The laboratory examinations showed negative urine, normal renal efficiency test, and the following bile and pancreatic tests: September 15th, A fraction 20 c. c., light yellow, cloudy, mucus xx, pus xx, and Bassler test twelve units; B fraction, 70 c. c., dark brown, cloudy, mucus xx, pus xx; C fraction 60 c. c., light yellow, cloudy, mucus xx, pus xx. The diagnosis was chronic cholecystitis, perhaps with stones, and secondary fibrosis of the liver. Operation was refused.

(*To be concluded*)

Cholecystoduodenostomy by Nature

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The passage of large gallstones per rectum has been reported at various phases in the history of biliary tract surgery. Recently a report by Gordon (1) and later one by Niles (2) stimulated my interest in this phenomenon of nature.

The literature on gallstones brings out some very interesting facts. Intestinal obstruction not infrequently occurs from large calculi escaping from the gallbladder and lodging in the lumen of the intestine. Courvoisier's statistics of fifty-two cases gives impaction in the duodenum and jejunum in 21.4 per cent.; in the ileum in 65.2 per cent.; in the ileocecal valve 10 per cent. and in the sigmoid flexure in 2.4 per cent.

In Robert's case, reported in 1903, a calculus of unusual dimensions was removed from the ileum This measured four and a half by three and a half inches in circumference. An even larger calculus than this was removed by Baildon in 1915, measuring five and a half inches in circumference.

Statistics from various sources (3) show that from two to four per cent. of the cases of intestinal obstruction are due to large gallstones. In some cases the calculus may be felt through the abdominal wall as a round or slightly oblong hard mass, devoid of tenderness and in any region of the abdomen or the pelvis, depending upon in what part it is lodged.

FIG. 1.—Gallstones passed by patient in Case I

Gallstones too large to pass through the cystic duct may be accompanied by inflammation of the gallbladder and promote ulceration or peritonitis (4). Not infrequently they will rupture through into the intestine. Deaver states that, "in a large majority of cases the calculus enters the intestinal tract through a fistulous opening between the gallbladder and the duodenum."

The case I shall report is similar to that reported by Gordon but differs in the number of large gallstones passed.

CASE I.—On October 7, 1921, I was called in to attend Mrs. C. S. who was in a typical gallstone colic attack, which had its onset three days previously with constipation, nausea, vomiting and severe abdominal pains in the upper right quadrant. The pain had increased in severity and was localized in the region of the gallbladder and was accompanied by epigastric distress and referred pain to the right scapula. There was no fever.

The patient was forty-one years of age. Menses began at twelve years, regular twenty-eighth day type, three days' duration, scanty flow, and no pain. She had married at twenty-eight and was never pregnant. She had grippe at thirty-four years, with complete recovery and no sequelæ. At thirty years hyperchlorhydria started and the first attack of gallstone colic occurred when she was thirty-four years old. Recurrent attacks of moderate severity occurred twice yearly up to present complaint. She had otherwise always been strong and performed her daily household duties for herself and husband regularly. She had always been a hearty eater, indulged in alcoholic liquors moderately, was regular in habits of sleep, lived in a sanitary environment, but was subject to attacks of nervousness.

Physical examination showed a female, weight 70.5 kilos, height 162 cm., well nourished and corpulent, in severe abdominal pain. The sclera was moderately jaundiced, skin slightly jaundiced, facies worried. Respirations were increased and restricted but the pulmonary sounds were negative. Cardiac sounds were clear and distinct and of good quality. The abdomen was round, corpulent and distended. There was tenderness over the epigastrium and well localized tenderness over the gallbladder, with moderate right rectus rigidity. There was dullness in the upper right quadrant and tympany through the remainder of the abdomen. Temperature was 99°, pulse 90, and respirations 26.

The patient was told of the necessity of an operation but chose to remain home until the attack had subsided. The usual treatment was instituted and gradual improvement followed, interrupted by irregular abdominal pains. On December 1st two large gallstones were passed, per rectum, and on December 2d two more were passed, followed by six more up to December 9th. Since then she has enjoyed good health and has been free of all gallbladder symptoms.

The stones, as shown in Fig. 1, were of the calcium cholesterin type and were weighed three years and two months after they were passed by rectum. In the order of their arrangement in the illustration their weights in grains were one hundred and twenty-four, fifty-four, fifty-four, forty-nine, forty-seven, thirty-nine, thirty-five, one and a half, one, one, and three quarters. Undoubtedly these would have shown a higher weight if weighed immediately.

It is quite likely there was a chronic low grade of cholecystitis present in this case at the time of the acute attack and the abdominal straining augmented by peristalsis caused an ulceration into the duodenum resulting in a fistula through which the calculi passed, and owing to their size were delayed in their passage through the intestine. Assisted by the subsequent adhesions a natural cholecystoduodenostomy resulted which accounts for the drainage of the gallbladder and the relief of symptoms.

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Lesions of the Gallbladder

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The treatment of infections and pathological conditions of the biliary system cannot by any means be called a closed chapter in medicine. While numerous papers have been published of pioneer work in this field during the past twenty-five years, as yet, there is no unanimity of opinion among physicians regarding treatment, and, particularly, the proper evaluation of medical and surgical procedures.

The purpose of this paper is to analyze briefly the various procedures advocated in the treatment of lesions of the biliary system, and to attempt to evaluate these means based on rational anatomical, physiological, and pathological grounds.

Even at the risk of repeating facts known to many, a brief résumé of the anatomy, physiology and pathology of the gallbladder is here given in order that a clearer conception of the pathology of gallbladder infections and their clinical symptoms may be understood. While the modern trend of medical teaching today is to limit or disregard the old fashioned drilling in the fundamentals of anatomy and allied subjects, I cannot but feel that this is a serious error in our teaching, with the result that many medical men cannot properly interpret symptoms, signs, and findings of gallbladder infections.

Gall tract disease was known to the ancients. It was mentioned in the literature of the Middle Ages and was believed to be the cause of many obnoxious humors of the body. The first mention of gallstones was made by the Greek physician Trallianus Alexander, who wrote about the fifth century A. D., but this excellent description was lost for over a thousand years and was not republished until 1548. Gallstones were called "dried up humors." The next reference was made in 900 A. D., four centuries later, by Rhazes, the Arabian physician who described gallstones in the ox.

Like the uterus, gallstones were considered the cause of epilepsy. It was not until 1507 that we have the first accurate account of gallstones in a paper by the celebrated Italian physician Benivenius, entitled "On the Hidden Causes of Disease." Can we not with almost the same modesty apply this title to the many recent papers on biliary lesions?

During the eighteenth century there were less than twenty contributions to our knowledge of gallbladder disease. In 1725 St. Andrews was the first to draw a distinction between obstructive and hemolytic jaundice.

It can readily be seen that our present knowledge of the cause and effects of gall tract disease is closely allied to the development of the surgical era of medical history. Credit for most of what we more recently have learned is due to the writings of Pasteur, Ehrlich, Nothnagel, Naunyn, Kehr, Mayo-Robson, Weil, Moynihan, Bland-Sutton, Chiari, Banti, Pavlov, and Rolleston. Of the more recent contributors we must mention Musser, Herter, Ewald, Kelly, Mayo, Brewer, Deaver, Meltzer, Smithies and a host of physiologists, röntgenologists and clinicians.

ANATOMY AND PHYSIOLOGY.

Only the important points of the anatomy, embryology and physiology are cited here to refresh our memories of these facts. It is remembered that the digestive tract at first is just a straight tube. From this, two analagen or buddings are formed, which forms the future lungs and the third and fourth are the analagen which form the future liver, part of the pancreas and the bile ducts.

The two liver analagens unite and together form the right and left lobes of the liver, with the two ducts which as a rule unite in a common duct from which the cystic duct later develops. The gallbladder is the reservoir for the bile; it is a conical or pearshaped musculomembranous sac, lodged in a fossa on the under surface of the liver, fixed by connective tissue, and extending from front to back, obliquely. Its length is three to four inches, its breadth one inch or more at its widest part, and it holds from thirty to forty c. c. It must also be borne in mind that the liver secretion is from 1000 to 1500 c. c. and it can readily be seen that only a very small amount of the bile is present in the gallbladder if it was only a simple reservoir, but upon analysis the bile in the gallbladder as compared with that secreted by the liver has been found to have a concentration from six to eight times, in addition to an increase of mucus. This, fundamentally, is one of the principal reasons for the development of pathological conditions in the gallbladder.

It is divided into fundus, body and neck—the fundus or broadest part directed downward, forward, and to the right and at times projecting below the edge of the liver. This anatomical fact is of clinical importance in the differential diagnosis of hydropic gallbladder and kidney enlargements. During the respiratory excursion the amount of motion and direction of these two organs varies.

The body and neck are directed upward, backward, and to the left, and the neck is at a slightly higher level than the lowest point of the fundus—and thus the direction of the bile is away from, rather than towards the outlet. It is selfevident that this leads to a tendency to stagnation of bile with the resultant pathological infections and stone formations.

The upper surface of the gallbladder in the majority of instances is attached to the liver by connective tissue, bloodvessels, and lymphatics, but not infrequently the whole organ is completely invested with a serous or peritoneal coat so that we have a gallbladder attached by a "mesentery."

The cystic duct is the smallest of the three biliary ducts, measuring one and one half inches in length and less than one quarter inch in width, and passes obliquely downwards and toward the left to join the hepatic duct and form the common duct. It is

in the gastrohepatic omentum in front of the portal vein with the hepatic artery lying at its side.

The common duct—the largest of the three ducts is the common excretory duct of the liver and gallbladder—is three inches in length, about the size of a goose quill, and in ninety per cent. of cases has a common point of entrance in the duodenum with the pancreatic duct. This conical cavity, formed by fusion of the two ducts, is known as the ampoule of Vater. It averages about four tenths of an inch in length. If fusion of the ducts does not take place there is no ampoule of Vater. The orifices then open upon the summit of a papilla. It should also be remembered that there is a sphincteric arrangement of circular, muscular fibres—sphincter of Odii—which may be spastic at times and give rise to gallbladder symptoms.

The walls of the ducts and gallbladder consist of three coats, an exterior or serous coat, a muscular, and a mucous coat. The mucosa of the gallbladder is generally tinged with yellowish brown color and is everywhere elevated into minute rugæ by the union of which numerous meshes are formed. The depressed intervening spaces have a polygonal outline, smaller at the fundus and neck.

Opposite the neck of the gallbladder the mucous membrane projects inward as oblique folds or plications which somewhat resemble valves. (Heister). Here, too, definite sinuses are present in about twenty-five per cent. of gallbladders which may not only penetrate the mucosa but may even extend through the muscular coat to the peritoneal surface. This accounts for the presence of small calculi, present at times, subperitoneally. Mucous glands may be present in this coat as well as diffuse lymphoid tissue, and it should be emphasized that many authorities do not consider these as true glandular structures.

The mucosa consists of a single layer of high columnar epithelium which extends to and becomes continuous with the mucosa of the duodenum. Its blood supply comes through the cystic artery, a branch of the hepatic, and by branches from the hepatic arterioles within the liver substance overlying it. The cystic artery runs parallel with the cystic duct and at its neck divides into two branches. This accounts for the profuse hemorrhage often encountered when the gallbladder is dissected from its bed from above downwards. The cystic veins open into the right branch of the portal vein.

The nerves of the gallbladder come from the celiac plexus, from the left pneumogastric, branches from the phrenic derived from the fourth cervical. This accounts for pain referred to the right shoulder in gallbladder disease through the supraacromial nerve —also a branch of the fourth cervical.

The gallbladder is supplied with very rich lymphatic plexuses. There is one set of lymphatics just beneath the mucosa in which collections of lymphoid tissue is present. There is a second group in the muscular layer and another group beneath the peritoneal layer.

All the lymphatics converge at the cystic duct—some passing to the lymphatics of the pancreas, some to the under surface of the liver and some to the anterior surface of the liver.

It can readily be appreciated from the few outstanding points emphasized, that a thorough knowledge of the anatomy of the biliary system is absolutely necessary to interpret fully clinical findings in gall tract disease.

BACTERIOLOGY AND PATHOLOGY

No attempt will be made to discuss the pathology and bacteriology of the gall tract lesions except to reiterate that the same processes occur in the gallbladder as found in the appendix and other organs. All types of bacteria have been isolated from the biliary ducts and gallbladder, especially the pyogenic organisms and notoriously the typhoid bacilli.

CLINICAL SIDE OF LESIONS OF THE GALLBLADDER

The forms of cholecystitis are numerous and constitute a progressive pathological series passing one into another. The clinical types are:

A. Acute.
   1. Catarrhal cholecystitis (membranous).
   2. Acute nonsuppurative cholecystitis.
   3. Suppurative cholecystitis.
B. Chronic cholecystitis.
C. Pericholecystitis.

The lesions of benign and malignant tumors of the gallbladder will not be taken up.

SYMPTOMS

No matter what its pathology, the severity of the symptoms varies with the degree of inflammation. The onset may be sudden or more gradual, following an indiscretion in diet, food poisoning, colds, exhaustion, and the like.

Local signs are due to two factors:: 1, infection, which spells peritonitis, and 2, overdistention, which means obstruction.

There are signs of local peritonitis in the right upper quadrant of the abdomen—pain, tenderness, and defensive rigidity of muscles. In addition to dull continuous pain there may be paroxysmal attacks of biliary colic, due to an obstructive process, which may mean stone or catarrhal obstruction. This pain may be referred to the right iliac fossa, stomach or back; the gallbladder may be palpable or even visable, always tender. Vomiting is common; fever present; leucocytes are increased. Respiration is restricted and jerky when deep; jaundice may occur due to extension into bile ducts; enlargement of liver due to concomitant infection is present. The attack, if left alone, subsides in ten to fourteen days, leaving a predisposed gallbladder awaiting some future attack.

DIAGNOSIS

The diagnosis may be easy or difficult, even impossible sometimes. There is a method of draining the gallbladder by means of a duodenal tube; drain the bile and then make microscopic and bacteriological analyses.

The separation of cholecystitis and gallstones is of only relative importance; practically all cases of gallstones have an associated cholecystitis, where as in many cases of cholecystitis there are no stones. In gallstone colic pain is more excruciating, whereas in cholecystitis there is evidence of local peritonitis.

In some cases it is difficult to differentiate from appendicitis; the tumor mass in gallbladder disease extends downward, in appendicitis upward. Res-

piratory excursion is greater in gallbladder disease. Sometimes differentiation is impossible as they are both present.

Right sided acute pyelitis may mask cholecystitis, in which case pyuria would be present, with other secondary findings.

SYMPTOMS OF CHRONIC CHOLECYSTITIS

There may be recurring attacks of biliary colic. The gallbladder may be tender, or it may be so tucked under the liver as to be impossible of palpation. It is nevertheless tender if we can get to it. In chronic cholecystitis, gallstones are so commonly associated that it is at times impossible to differentiate. In some cases, we have pericholecystitis adhesions, which give us only gastric symptoms.

Dyspepsia due to chronic cholecystitis may resemble that due to chronic appendicitis. In the absence of gallbladder findings the diagnosis is most difficult. (The hydrochloric acid in the gastric juice is diminished, whereas in dyspepsias of gastric origin the acid is increased.) If, however, with dyspepsia there are symptoms of toxic or microbic absorption, such as arthritis, phlebitis, neuritis, or myocarditis, we should be doubly prepared to find chronic disease of the gallbladder.

In chronic cholecystitis there may be a gallbladder that attaches to the surrounding viscera, as the stomach, colon, intestines. It may produce fistula (following ulceration), local abscesses, general peritonitis, diverticula and hemorrhage. In about four per cent. of the cases primary carcinoma supervenes. Of rather infrequent occurrence in chronic cholecystitis is a condition of "white bile."

WHITE BILE

White bile has been a puzzle to many operators. We nearly all agree that when present it indicates greater operative risk. Its cause is surmised but unknown. Kausch believes it is due to obstruction. There is a secretion of the mucosa of the biliary passages which is greater than resorption, which results in a distention of biliary passages with a gradual rise of pressure. When a certain point is reached the direction of the flow in the liver is reversed, that is, the bile passes back into the lymphatics and bloodvessels, and the mucosa continues to secrete. As a result of a continuation of this process the liquid in the ducts of the biliary passages becomes lighter and lighter and finally colorless.

Judd and Lyon report six hundred and forty-nine operations on common and hepatic ducts, in nineteen of which there was white bile—nine, obstruction from stone in common duct; six, trauma from previous cholecystectomy; two, cancerous; two, pancreatitis.

CHOLELITHIASIS

The formation of gallstones may be aseptic or infective.

Aseptic gallstones are due to a precipitation of cholesterin present in excess in the gallbladder, the normal amount being twenty to eighty mgm. to one hundred c.c. of bile and one hundred and thirty to one hundred and eighty mgm. to one hundred c.c. of blood. Cholesterol oleate is excreted into the gallbladder and the oleic radical split off and reabsorbed by the mucosa. A single pure cholesterin calculus is thus formed without any causal inflammation.

Infective stones are due to a mild grade of inflammation of the mucous membrane of the gallbladder. As a result there is an excessive liberation of cholesterin from the mucosa of the gallbladder, the bilirubin and calcium acting as a cement. The cholesterin content of the bile varies with the cholesterin content of blood, an increase or decrease in the blood causing a similar change in the cholesterin content in the bile. When infection occurs in a person with hypercholesterinemia and high cholesterin content in the bile, the condition for calculus formation is doubly assured.

The microorganisms causing a lithogenic catarrh are especially the typhoid, paratyphoid, colon and streptococcus (nonhemolyticus). This is thought by some to be the most important troublemaker. Other organisms are the pneumococcus, pneumobacillus, streptococcus hemolyticus, staphylococcus, micrococcus, Bacillus pyocyaneus, Bacillus influenza, and others.

Stagnation of bile is also an essential factor. Wherever stagnation exists there is a condition favoring infection. The anatomical and physical conditions producing stagnation are low fundus of gallbladder, cystic duct being higher than the bile, spiral fold in cystic duct causing retardation, low grade flaccidity of gallbladder wall. The sphincter of Odii, in its relation to diet has been proved to have a marked influence on stagnation.

The following triad of conditions, then, constitutes the acme of perfection in the production of gallstones, namely, high cholesterin content, stagnation of bile, and infection.

TIME ELEMENT IN THE FORMATION OF GALLSTONES

Klivert has produced stones experimentally in ten days. Rolleston and Mignot state that in five to six months a well formed stratified gallstone may be formed. Moynihan reports a case of typhoid fever in which a stone was formed in three weeks. Cameron reports a case in which thirty-eight gallstones were formed in a period of eighty-six days. I have a case in which a gallstone the size of an egg was probably formed in eighteen months.

INCIDENCE OF GALLSTONES

It increases with age. Still reports ten cases during intrauterine life. The female sex is predisposed to the formation of gallstones.

CLINICAL PICTURE OF CHOLELITHIASIS

The manifestation may be grouped as follows: confined to the gallbladder, biliary colic, obstruction of common duct, extensive inflammation to surrounding parts. The symptoms, however, produced by stones are protean and are grouped as follows: Masked or initial symptoms, biliary colic, purely mechanical or aseptic aspects, including intestinal obstruction, inflammatory and infective results, fistulæ.

Masked or initial symptoms.—Obstinate dyspepsia without relief from treatment, often diagnosed as gastralgia or gastritis. This is especially the case when the hydrochloric acid is decreased. Epigastric distress, coming on from thirty to forty-five minutes after meals, caused more especially by the ingestion

of greasy food and relieved by vomiting. Heartburn is very common. All of these symptoms may suggest gastric or duodenal ulcer but in gallstones we have irregularity of symptoms—intervals of dyspepsia which come and go. Epigastric pain is not relieved by taking food.

Biliary colic.—This is due to spasm of the muscular coat of the bile ducts and gallbladder. Large free stones may not produce colic, while typical colic may be produced by inspissated bile. Inflammation and kinking may also produce biliary colic. We also may get typical biliary colic in plumbism, tabes, and hysteria. Pain of biliary colic is usually paroxysmal and one of the most intense known to mankind. The pain may be primarily in the back, to the right of the eighth to eleventh dorsal vertebræ, then spreading to the front to the right hypochondrium, from thence radiating left hypochondrium, umbilicus and hypogastrium, also to the thigh, right arm, and neck. In some cases the pain begins in the epigastrium. The pain usually lasts three to four hours or perhaps only a few minutes. There may be reflex vomiting, flatulent dyspepsia, shivers and rigors, cold clammy perspiration. Fever may or may not be present. Abdominal muscles are rigid and tender, pulse rate normal and small, leucocytosis slight; albuminuria common, glycosuria rare. Indicanuria may or may not be present. Jaundice may or may not occur.

After an attack there are cutaneous hyperesthesia and muscular soreness of abdomen especially over the right hypochondriac area. This may continue for weeks. Chauffard has described eight tender spots existing during the interval between attacks.

In the diagnosis of biliary colic if the classical pains exist, with subsequent calculus in the stool, the diagnosis is certain. In the absence of stone, the diagnosis is not absolute. An acute cholecystitis may exist. In renal colic pains radiate down the testes, and there are frequent urinations and urinary findings. There may be Dietl's crisis and gallstones in the same patient. The appendix should always be considered, as we know there is a concomitant involvement of the appendix in twenty-five per cent. of gallbladder disease, and this is especially difficult when it is high in the abdomen. We must also consider hyperchlorhydria, gastric and duodenal ulcer and in these we have attacks more regular and not so agonizing. The hydrochloric acid is increased. The patient has learned that alkalies bring relief.

In perforation the patient lies quietly, and in biliary colic he writhes in pain. Tabetic crises should be ruled out by eye findings, the absence of the patellar reflex, and other neurogolical findings. In severe mucous colitis the stool findings are significant.

MECHANICAL EFFECTS OF GALLSTONES

1. Stones in the gallbladder rarely give symptoms. (There may be associated cholecystitis). Very rarely it is possible to produce symptoms by pressure.

2. Impaction of stones in cystic duct produces colic and severe vomiting at times. There may be intermittent hydrops, dilated gallbladder or shriveled gallbladder.

3. The mechanical effects of stones in common bile duct include the occurrence of sudden, severe pain. Pain may be absent, however, depending upon the size of the stones, irritation, and spasm. Jaundice is usually present and persistent and as long as calculi remain, but may gradually subside. In exceptional cases there may be obstruction and no jaundice. Spontaneous cure, following discharge of the calculi may occur, but should not be taken into consideration, as waiting sometimes produces an irreparable condition in the liver.

4. Gallstones in the ampulla of Vater may produce an acute hemorrhagic pancreatitis.

5. Mechanical obstruction of the intestines is very rare. Fritz, Barnard and Morestin have collected cases. A small calculus, if angular, may set up a reflex spasm of the bowel and obstruction. In the majority of cases the stones have ulcerated their way from the gallbladder into the duodenum. The patient is usually old. Vomiting is severe, and there is a previous hystory of attacks. Tympanitis is usually absent.

INFLAMMATORY AND INFECTIVE CHANGES DUE TO GALLSTONES

1. In the gallbladder there may be diverticula, ulceration, scars, and perforation.

2. In the cystic duct, impaction, ulceration, hyperplasia and surrounding infection.

3. In the common duct, ulceration and infection following lymphatics—chronic pancreatis—changes in the liver. There may be intermittent fever, termed by Charcot "intermittent hepatic fever."

BILIARY FISTULÆ

These may be internal or external. Internal fistulæ may join up with the stomach, duodenum, intestines, kidney, and bladder, and even with the bronchi, it has been said.

The diagnosis of cholelithiasis may be easy or difficult, or at times impossible. It is well to give a diagnosis of gallbladder disease and add, with probable gallstones. The x ray is of great diagnostic aid. Different workers report positive findings in stones in from twenty-five to seventy-five per cent. of cases. However, a negative reading does not exclude the presence of stones.

PROGNOSIS

It is plainly evident that in a given case of gallbladder disease, subject to so many changes and factors, our prognosis depends upon the extent of pathological or morbid changes, the extent and duration of infection, the condition of the biliary tract, the type of infection and the clinical types of gallbladder disease. This, combined with the general resistance of the patient, gives us our outlook on prognosis. In a general way the better our interpretation and judgment of clinical and pathological findings in the patient, the better will be the end result or prognosis. In the acute suppurative cholecystitis, with extending infection and peritonitis, the prognosis is necessarily grave, while in the acute nonsuppurative, catarrhal cholecystitis, with or without calculi, the prognosis is good. In a chronically infected gallbladder, with or without calculi, the ultimate outcome depends, aside from the skill of the surgeon, upon the methods of surgical treatment. As a general rule, the removal of the gallbladder

(cholecystectomy) offers a much less subsequent morbidity, but carries with it a slightly higher mortality.

CONCLUSION

In general, the viewpoints of Moore and Mayo reflect the best available opinions of the best surgical minds in preferring cholecystectomy to drainage. It is worthy of note that opposite opinions are most generally held by men of more limited experience, or those early in their surgical careers. It does not seem justifiable to make use of the results of such limited experience in making correct judgment as to the type of operation to be performed in gallbladder disease. It seems more proper to make use of the experience of men advanced in surgical knowledge and practice, and when all the published reports obtained under the latter conditions show a marked uniformity in preferring cholecystectomy to drainage, as a routine operation, it seems idle to speak of the unsettled opinion in regard to the proper operation for gallbladder disease.

5 East Garfield Boulevard.

Case Illustrating That an X Ray Study of the Gastroenteric Tract Is Not Infallible*

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The x ray study of the *prima via* undoubtedly conveys such a vivid impression of the truly scientific investigation as to lead quite naturally in the conclusion that its findings are infallible. Hence it is not surprising, though a matter of regret, that many physicians have come to regard it as the short cut to a certain diagnosis. Even to the lay mind, the röntgen study makes its appeal as the only method of establishing the existence of basic pathology.

Some of our best röntgenologists have taken note of the wide prevalence of this belief in the x ray's infallibility and have warned us of its fallacy. Stewart states that "the usual röntgenograms, before and after defecation, following the colon with an opaque medium, are not sufficient in many cases to reveal the lesions." (1)

Carman reports two contrasting cases: 1. Adenocarcinoma of the stomach revealed by röntgenogram but not palpable on exploration by the surgeon. 2. A gastric ulcer not shown by the röntgen ray but found at operation. He says: "One demonstrates the difficulty experienced sometimes by the surgeon in locating a lesion after it has been revealed by the röntgen ray, and one demonstrates that the röntgen ray is not infallible in the diagnosis of gastric ulcer." (2)

The case I wish to present demonstrates that, while a röntgen investigation aids us in diagnosis when the findings are positive, it often presents findings that are negative, and therein constitutes a danger to the extent such findings halt further inquiry.

Case I.—The patient was a male, twenty-nine years old, a barber by occupation. His family history and previous personal history, except for dysentery and gonorrhea, were negative. His present illness was of short duration, i. e., six months. His chief complaints were pain in the lower abdomen after meals, intermittent vomiting for about four days, no hematemesis, and diarrhea lasting for about three weeks. At the time of the examination, his appetite was good and bowels regular. He had lost ten pounds during his illness. There were no symptoms referable to the genitourinary tract.

The patient was of the asthenic habitus. Abdominal examination revealed tenderness in the upper left quadrant on deep palpation. A small mass was felt in that region which moved with respiration. Liver and spleen were not palpable. Neurologically he was found to be negative. Blood showed secondary anemia. Gastric analysis of an Ewald test meal showed an entire absence of free hydrochloric acid, and a total acidity of 12. The bladder was catheterized, cystoscoped, and the ureters catheterized, but no gross pathology noted. The urinary flow from both kidneys was slow; that from the left being slower and the urine lighter in color. The pyelogram revealed a sharp extrapelvic angulation in the left ureter. The report expressed uncertainty as to whether this resulted from an intrinsic or extrinsic tumor of the kidney.

Radiography of the gastroenteric tract revealed no pathology. A barium suspension enema disclosed no lesion in the colon. An additional fluoroscopic investigation with a barium enema showed the colon filling perfectly and it was easily discernible that the palpable abdominal mass was separate and distinct from the colon below the splenic flexure.

The diagnoses tentatively made were: Dislocated spleen, floating kidney, hypernephroma.

The following is a report from the Roosevelt Hospital: "An exploratory colostomy was performed on January 12, 1925. An upper left rectus incision was made. The terminal transverse colon, splenic flexure and the whole of the descending colon were involved in a massive carcinomatous growth, firmly fixed with metastasis into the small intestine. The condition was inoperable."

Notwithstanding the sharp criticism that is usually bestowed upon exploratory surgery, this procedure was evidently justified in this case, for not until the "curtain of the anterior abdominal wall was withdrawn" was the correct diagnosis made.

Carman is right in saying that "thorough reliance on the röntgen ray is a gratifying compliment, but it sometimes leads to error."

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1. Stewart: *Amer. Jour. of Rönt.*, February, 1924.
2. Carman: *Ibid*, August, 1921.

*Taken from the files of the Department of Internal Medicine and Gastrointestinal Diseases, Vanderbilt Clinic, Columbia University.

Instruments, Apparatus, and Clinical Notes

A NEW RECTOSIGMODOSCOPE*

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In offering to the medical profession a rectosigmoidoscope of novel design an effort has been made to furnish an instrument which would be easy to introduce, give but little discomfort to the patient and at the same time furnish a superior view of the rectum and sigmoid colon.

Obvious and admitted deficiencies in current types of proctosigmoidoscopes are eliminated and many new features introduced. The instrument consists of three parts: a barrel (B) either fifteen or twenty-five centimetres in length, three quarters of an inch in diameter, calibrated in centimetres, and furnished with a nonrolling flange (F) at its proximal end. Second, an obturator point (O) which fits on to an inner tube. Both of the above parts are durably made and may be sterilized by boiling. Third, the inner tube (I) which slides like a telescope into the barrel of the sigmoidoscope. It acts as a light (L) carrier and has an attachment for the obturator point. The interior of this inner tube is of a dull black gunmetal finish which successfully obviates reflections throughout the barrel of the sigmoidoscope. This inner tube acts as a combined dark chamber light carrier and by means of the obturator point combined also as an obturator. The distal part of this inner tube is exposed sufficiently to enable thorough cleaning. The proximal end of the inner tube is provided with a swinging window (W) which cannot be lost but which may be swung open to permit topical applications or instrumentation through the scope. It is also provided with a binding post for electrical (E) connection and an inflation nipple (A) for bulb attachment.

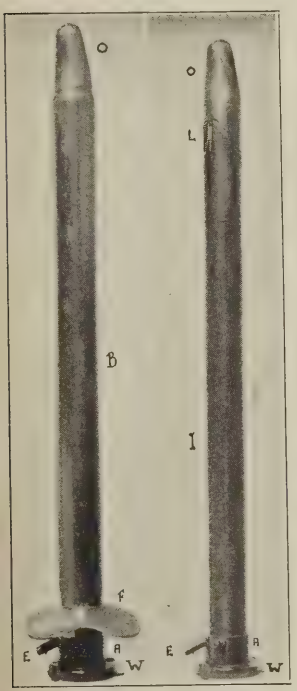

Fig. 1 Fig. 2

FIG. 1.—Rectosigmoidoscope ready for use.

FIG. 2.—Inner tube of scope with obturator point in place.

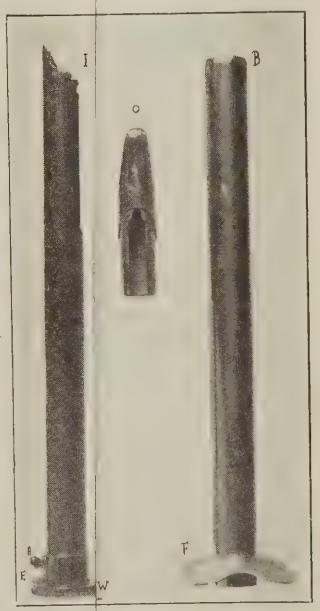

FIG. 3.—Showing the three parts of the scope; inner tube, obturator point and barrel.

The manner of using this instrument is as follows: After inflating the instrument with air the obturator point is gently inserted into the anal canal. Its dilating point gently divulses the sphincter without discomfort to the patient. Through perforations in the obturator point air passes into the bowel and by gently inflating it dilates it in advance of the instrument. When the instrument has been passed the requisite length the inner tube is withdrawn leaving the scope *in situ*. A simple slight pressure releases the obturator point which may be dropped into a sterilizer. The inner tube is then lighted and reinserted. During insertion of the inner tube it may be seen whether the field is clear and should there be any liquid feces they may be dealt with, without soiling the lamp, by merely withdrawing the inner tube to a safe distance. Then through the swinging window the area may be sponged clean and the inner tube advanced. Now by withdrawal of the entire scope all the mucosa of the sigmoid colon, rectum and anal canal may be completely and easily examined.

For the sake of brevity, and at the risk of bluntness, the features of this instrument which I believe render it attractive may be stated as follows:

1. The instrument is compact, easily sterilized and durable. It may be carried in any doctor's bag of ordinary size without the need of a special case.

2. The dilating point facilitates easy insertion by gradually dilating the sphincter during its introduction.

3. The pneumatic obturator dilates the bowel in advance of the instrument by gentle inflation.

4. There is a dur-

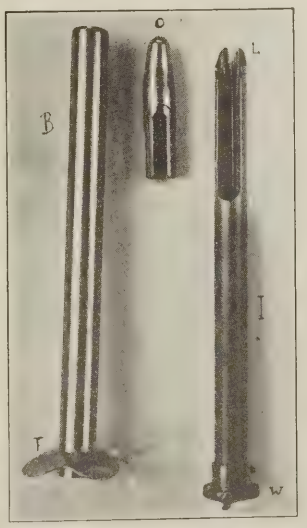

FIG. 4.—Another view of the unassembled rectosigmoidoscope.

Lettering: B, barrel of sigmoidoscope; F, nonrolling flange; W, swinging window of scope; I, inner tube; O, obturator point, detachable; L, light; E, electrical connection; A, inflation nipple.

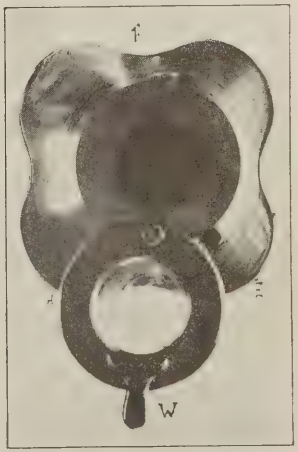

FIG. 5.—End view showing swinging window and nonrolling flange.

*Read before the New York Academy of Medicine, Section on Surgery, April 3, 1925.

able distal light which may be withdrawn should there be danger of liquid feces soiling it and which affords light during the entire retreat.

5. The diameter is that which experience has shown to be most acceptable to the average patient.

6. There are no reflections in the barrel of the scope owing to the darkened interior.

7. The instrument is simplicity itself. There is no cumbersome handle nor awkward obturator.

8. It may be used either on a battery such as that used for otoscopes or may be used with house current provided a rheostat is used.

9. Those parts of the instrument which touch the patient can be readily sterilized by boiling. These parts are strongl made, the delicate part of the instrument, that is the inner tube which carries the light and electric viring, may be easily cleaned without damage.

The instrumen should find use in rectosigmoidoscopic examinatin, in the topical applications of medicines to the olon or rectum; for the obtainance of biopsy specimns; for the cauterization, fulguration or removal c polyps in the rectum or colon. It may also be usec for other operative procedures in the rectum and clon for the implantation of radium in malignant' grcvths and for many operative procedures on the lo/er bowel.

540 Park Avnue.

Physiological Transfusion Appiratus

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Before presenting a new apparatus for transfusing blood it would perhaps be advisable to briefly mention the desiderata for ideally accomplishing the operation. Then, a comparison of the newly devised method to the ideal will be productive of the most severe criticism possible and also of true evaluation.

The ideal method of transfusing blood would be to convey it directly from the bloodvessels of the donor to those of the recipient through a channel lined with vascular endothelium without interruption of continuity at the points of contact. The nearest possible approach to this ideal is represented by direct suture of the artery of the donor to the vein of the patient, or by coaptation of the donor's and patient's vessels by means of a Crile cannula or some of its modifications.

The difficulties of technic, the surgical experience and the time necessary for the performance of this operation have all combined to make it an impractical method for the large number of physicians who are called upon to do transfusions.

The semidirect method is a step removed from the preceding, in that some form of tube or cannula is used to bridge the gap between vascular systems. The tube is made of glass or silver, one end is tied into the donor's artery and the other into the recipient's vein, the tube having been previously paraffined to diminish the tendency towards coagulation. This method has none of the difficulties of the previously described one, but the dose cannot be measured accurately, and there is danger of a cardiac dilatation in the recipient because of the marked increase of pressure to the right auricle brought by the high pressure from the artery of the donor.

The indiect methods which have dominated the field of recent years are: 1. The paraffined tube, of Kimpton and Brown, Percy, David and Curtis. 2. Needle and syringe apparatus of Lindeman and Crotti. 3. The valve and syringe method of Miller and Unger. 4. Addition of anticoagulants as the citrate of Weil and Lewisohn or herudin of Satterlee and Hooker. 5. Using defibrinated blood.

The tube method necessitates dependence upon a paraffin surface s an anticoagulant, which is not always reliable. 'hen the blood remains in the tube for a considerabl period of time before being injected into the reipient. In this connection, Novy's work is interestin. He found that ten c.c. of blood drawn from a rabit and immediately injected into a guineapig causd Little or no reaction, but that if the blood were kot in the syringe for three minutes before being injeted it became toxic, two c.c. becoming a lethal dse. This furnishes another objection to the paraffied tube method.

The needle andsyringe method of Lindeman and others is satisfacory in their hands because they have developed acorps of well trained assistants, which is indispensble for the rapid transference and cleansing of the seies of syringes, but for that reason has not received vider application.

The valve and syringe methods of either Miller or Unger are alsc satisfactory when used by them. The technic necesary for the avoidance of a fiasco is rigid and allowsof no variation or deviation, and since it involves sveral varieties of movements, an error frequently ocurs and vitiates the result. For instance, the barr sticks in the syringe and saline must be used to wsh it out and cleanse the connections. Or, duringthe passage of saline through the apparatus the opertor becomes confused and begins to draw back the lood from the recipient.

When successfily performed, a transfusion by either of these methods gives a minimum reaction.

The anticoagulat method received wide application during the Wcld War and is perhaps the easiest method. The obections against its use are, the more or less severe reactions noted which result probably from a, ie introduction of the anticoagulant into the blood b, the agitation and standing of the blood which cuses destruction of some of the blood elements an production of toxic substances.

The use of defibinated blood, of course, has many objections such as marked reaction, removal of important constituent rendering it less potent in restoring the hemoglobin content of the recipient.

A new method herein described is believed to

present so many advantages that it will probably supersede all others because of its universal applicability. The apparatus is accompanied by an adjustable base which can be clamped to a board upon which the arm of the recipient and that of the donor rests, so that the apparatus can then be mounted be-

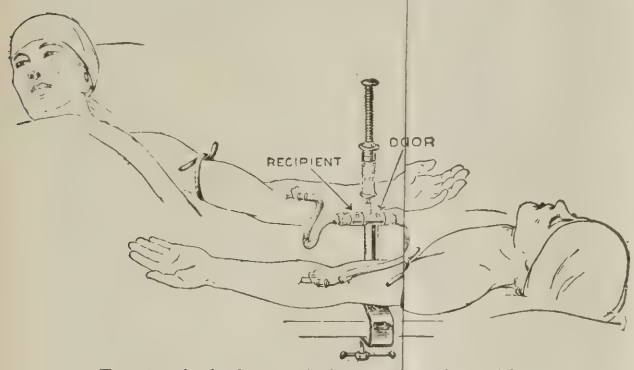

FIG. 1.—Author's transfusion apparatus in position.

tween the two elbows. It consists of a donor's end, a recipient's end, and an outlet between the two, to which a two c.c. record syringe is connected in an upright position. Between the ends and the syringe outlet are two ball valves so arranged that pressure on the syringe opens one and closes the other, and aspiration action of the syringe closes the first and opens the second. The valve action is made foolproof by the use of fine springs which ensure perfect closure. The bundle of the syringe plunger is fitted with a tension spring which automatically withdraws the piston from the barrel and thus automatically aspirates. The upright position of the syringe allows easy emptying by a downward thrust from the palm of the hand on the handle of the syringe plunger. Release of the hand is automatically followed by aspiration of the syringe plunger because the tension spring immediately withdraws the piston. Fig. 2.

The donor's and recipient's ends are stamped. Rubber tubing connection to the ends is made, needles are attached to the free ends of the tubing, the entire system is filled with warm saline by placing the donor's end in a saline solution and making a few downward thrusts on the syringe plunger until the saline flows out of the recipient's end. The needles are then inserted into the proper veins, i.e., donor's end into vein of donor and recipient's end into vein of recipient, and the syringe is emptied as rapidly as it fills by a downward thrust of the palm on the handle. Each thrust represents two c.c. and the number is noted until the total required is reached. The needles are then withdrawn and the operation completed.

The apparatus herein described has these qualities to commend it:

1. It offers a simple method for conveying measured amounts of blood from one individual to another under conditions of pressure and velocity which may be regulated by the operator.

2. The blood is in contact with a foreign surface for considerably less time than in any other method.

3. The operator is never hindered by sticking of the piston in the barrel. (A serious objection in other syringe methods.)

4. With this method, therefore, merely one syringe is necessary, a duplicate being provided only because of the ever present contingency of accidental breakage.

5. There being no stickiness or coagulation, a third valve to allow washing through with saline is entirely unnecessary.

6. After the apparatus is connected to the donor and recipient the repetition of only one movement is necessary to perform the entire transfusion. This eliminates an important vitiating factor, it being axiomatic that the greater the variety of movements necessary to produce a given result, the greater the possibility of serious error.

7. It automatically makes it impossible to reverse the direction of the flow and send blood from the prospective recipient to the prospective donor.

Let us consider these qualities in detail.

1. The only difficulty in performing the operation is in effecting satisfactory entrance to the veins of the donor and recipient. This is universal no matter what transfusion method is employed. The blood is measured by a calibrated syringe, the syringe itself is never moved. The piston alone is moved back and forth. The filling movement of the piston is automatically accomplished by the spring. The only movement necessary on the part of the operator is the push on the piston handle to empty the

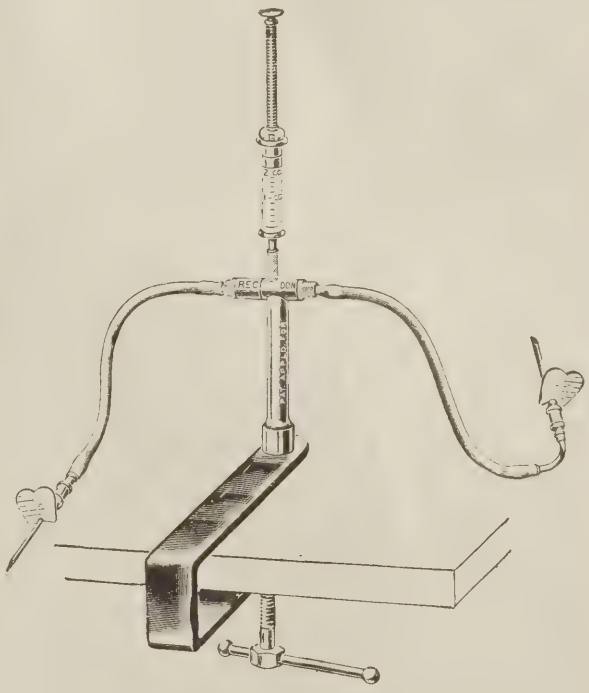

FIG. 2.—Author's transfusion apparatus

syringe. Thus the volume, velocity and pressure are easily controlled.

A two c.c. syringe is used. This offers a smaller surface for contact than a larger syringe. It can be filled and emptied in one tenth the time necessary to fill and empty a twenty c.c. syringe. The apparatus fits in between the elbows of donor and recipient so that a minimum of rubber tubing is necessary to

effect continuity between their respective veins. Thus the time that a drop of blood is in a container not lined by intima is considerably less than in any other method. The importance of this fact can not be too strongly stressed. Every indication points towards foreign contact as second in importance only to imperfect matching, in the etiology of transfusion reactions. It is to this that we attribute the absence of reactions in our cases. In not one was there any evidence of reaction as indicated by a chill or a rise in temperature.

3. The time necessary to fill and empty a two c.c. syringe, as stated, is fractional as compared to a similar procedure with a larger syringe. The actual time is less than the minimum time necessary to get breakdown of corpuscular elements to form tissue extract in sufficient quantity to cause stickiness of the piston in the barrel. This obviates a serious objection encountered in the use of other valve and syringe methods where it would be impossible, practically, to use less than a ten c.c. capacity syringe. Since no other apparatus has the automatic valve, with any other than the method herein described, each syringe manipulation would necessitate an accompanying valve regulation. Thus it would be necessary manually to open the donor's end, fill the syringe, close the donor's end, open the recipient's end, empty the syringe. This would constitute one set of movements. If a twenty c.c. syringe is used twenty-five such sets of movements would be necessary to transfuse five hundred c.c., but if one should attempt to use a two c.c. syringe, two hundred and fifty such movements would be required for the same amount of blood transfer. This manifestly would be impractical. Therefore, the attempt to prevent the objectionable stickiness (really an early coagulation phenomenon) encountered in other valve-syringe methods, by adopting the use of a two c.c. syringe, is impossible.

4. It follows then, since there is no stickiness of the piston in the barrel, that only one syringe is necessary, a duplicate being provided only because of the ever present contingency of accidental breakage.

5. The facts related in the two immediately preceding paragraphs are evidence of the superfluousness of a third valve to allow washing through with saline.

6. Shunting the blood from the donor into the syringe and from the syringe into the recipient is automatically accomplished. The negative pressure caused by withdrawing the piston from the barrel opens the valve on the donor side of the apparatus and simultaneously shuts the valve on the recipient side. Positive pressure, by plunging the piston onto the barrel, does the reverse, namely, closes the valve on the donor side and opens the valve on the recipient side. Thus, after the apparatus is connected to the donor and recipient by rubber tubing bridging the gap between the needles in the veins of the two principals, the only movement is the filling and emptying movement of the piston. Since the filling movement is automatically accomplished by the spring on the piston handle, the only movement necessary on the part of the operator is a downward thrust on the piston handle to empty the syringe. Thus th procedure is made as fool proof as possible.

7. The valves are opened and shut by definite differences in presure. The apparatus is so constructed that whe the syringe is full, if the recipient's end be closed off by clamping, it is impossible to empty thesyringe through the donor's end, because the greater the pressure exerted on the syringe piston the more tightly does the valve in the donor's end close.

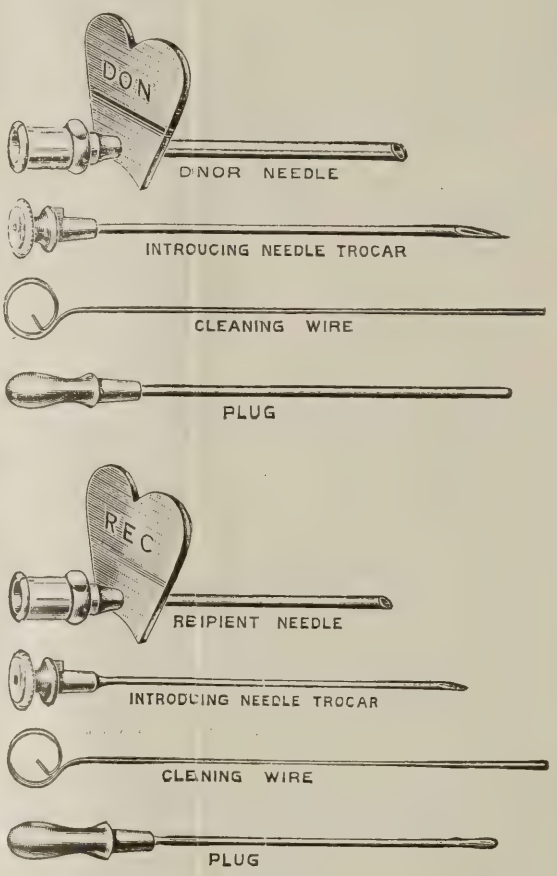

Fig. 3.—Parts of the author's transfusion apparatus.

If the donor's end be clamped and the piston withdrawn from is barrel no blood will flow into the syringe from the recipient's end because the greater the negative pressure in the syringe the more tightly does the valve on the recipient's end close.

Thus it is imposible accidentally to reverse the direction of the sream and send blood from the prospective recipiet to the prospective donor.

The apparatus i mounted on an adjustable base which makes it posible to fix it in such a position between the elbow of the donor and the recipient which will necessitte the use of a minimum of rubber tubing. This firther diminishes the foreign surface area and the length of contact time between blood and this surface.

By this method one thousand c.c. are transfused in less than eight minutes, no blood is lost, the operation becomes fool proof, reactions do not occur, and the operation of transfusion ceases to assume proportions of othe than a minor procedure. These statements are refrable only to the actual technic

of conveying blood from one individual to another and are based upon the premise that careful typing and matching of the bloods are routinely done.

It can readily be seen that the apparatus is adaptable to other uses. Infiltration anesthesia, aspiration of cavities, autotransfusion in ruptured ectopic cases are some of the procedures that may be accomplished with it.

By dipping the rubber tubing from the donor's end into the novocain solution, and attaching a needle to the tubing on the recipient's end, the apparatus is ready for use as a means for rapidly infiltrating a large area. It is only necessary to push the syringe plunger and guide the needle and anesthesia is rapidly effected.

After thrusting the needle attached to the donor's end into a pleural cavity containing fluid, the fluid can rapidly be withdrawn by pushing the syringe plunger.

In ruptured ectopic cases autotransfusion can be accomplished by connecting the recipient end of the apparatus to a vein and after connecting a glass funnel (covered at the wide end with two thicknesses of gauze for straining purposes) to the donor's end, placing the funnel in the pelvis and pushing the syringe plunger.

In summing up, the apparatus herein described is offered as an ideal medium for transporting blood from one body to another, because it most closely approaches all the conditions necessary for making blood transfusion universally a simple and safe procedure.

284 New York Avenue.

Intestinal Toxemia with Especial Reference to the Use of Colonic Irrigations.—Russell S. Boles (*Medical Clinics of North America,* November, 1924) states that clinical experience, together with a study of the literature, makes it evident that the condition known as intestinal toxemia actually exists, even though the toxins have not been demonstrated in the blood. Intestinal stasis initiates chemical changes and bacterial decomposition in the intestinal contents, and these forces working together produce alterations in the tissues that permit the toxins generated in the intestinal tract and bacteria to invade the tissues, bloodvessels, and lymphatics, and eventually to interfere with general nutrition and to bring about degenerative changes in the liver, pancreas, and other organs.

The symptoms of intestinal toxemia are manifold. They may be gastrointestinal, ocular, cutaneous, nervous or mental. A diagnosis of intestinal toxemia should be made only after careful physical examination and laboratory tests exclude the possibility of organic disease. The urine and feces should be submitted to careful chemical and bacteriological tests.

The aid of the x rays should also be invoked. The presence of an excessive amount of indican in the urine is a help in establishing the diagnosis; the best single index as to the degree of intestinal putrefaction is afforded by the determination of the ethereal sulphates. This procedure, however, does not determine the character of the putrefactive products.

Treatment must be directed to overcoming intestinal stasis, alleviating catarrhal processes, and restoring muscular tone. The character of the diet is of first importance and depends upon the type of toxemia present. In the indolic type, which is the most frequent, a low protein and high carbohydrate diet is indicated, while in the fermentative type the reverse is required. Much may be expected from the proper use of vaccines (particularly autogenous vaccines) and acid producing bacteria, such as Bacillus acidophilus. The latter should always be administered in milk cultures not in tablet form, combined with lactose.

Colonic irrigation is a valuable adjuvant in relieving stasis and atony and their resulting symptoms. Other aids in the treatment are the administration of agaragar and mineral oil, correction of faulty posture by well adjusted corsets or belts, outdoor exercise, special exercise and massage of the abdominal muscles, and deep breathing. The application of the faradic current following irrigation appears to be of value in overcoming atonic constipation. The use of laxatives is contraindicated.

Postoperative Pulmonary Embolism.—P. Lockhart-Mummery (*British Medical Journal,* November 8, 1924) states that at present there is no known means of ascertaining when a thrombus has formed in the great veins, and much less is there any means of treating it. The reduction of the coagulability of the blood of the patient before operation would be liable to result in equally serious disasters of another kind. The Trendelenburg operation, which endeavors to remove the thrombus from the pulmonary artery, has been done, but it does not seem sound, as patients who have survived a pulmonary embolism long enough to undergo an operation will probably recover anyway. It is to prevention rather than cure that we must look if we want to get rid of the mortality after operations from pulmonary embolism.

The present methods of anesthesia, which include a preliminary injection of morphine, probably tend to encourage thrombosis by slowing the blood stream during the dangerous period. The best method of preventing patients from getting postoperative thrombosis does not consist in altering the technic of operations, but rather in altering the methods of preparation and of aftertreatment. Preliminary purgation of the patient should be entirely abolished; if necessary it should be carried out five or six days before operation. The practice of starving the patient both before and after operation should be discontinued. The supply of proper mattresses on the tops of operating tables, and the prevention of the patient assuming a constrained position during the operation which would cause pressure upon the veins, are points requiring greater attention. The frequency of embolism after gynecological and gallbladder operations is possibly attributable to the unnatural positions in which the patients are placed. The author thinks that we should attach more importance to the comfort of the patient on the operating table than we do at present. The patient being unconscious, we allow him to remain for an hour or more in a most constrained position, which will embarrass the circulation in the lower limbs and pelvic veins.

Editorial Articles

EXHAUSTED NUTRITIVES

We, or at least our children, are urged these days to eat various things which we do not want, and might, therefore, on general principles, seem not to need. Bowing to authority, many of us have followed humbly the leadings of the "nutrition workers" and have taken spinach and carrots and their ilk as a matter of conscience. William James preached that it was good for us to do something disagreeable every day, so aside from the iron and lime and those elusive vitamines which we are supposed to get, doubtless we have received much material for moral upbuilding.

We make no complaint against this diet (even if we do not like it) provided we really take in the ingredients which are supposed to be contained in the prescribed foods.

Now cometh the agricultural scientist and deposeth that spinach is, in many a garden patch, suffering from chlorosis. If the spinach suffers from chlorosis, will not the human who depends on spinach for his daily supply of iron also suffer from chlorosis? In the Rhode Island Experiment Station they have found that the application of manganese sulphate to the soil cures the condition. Why not apply the manganese directly to the human plant and secure immediate results as to the supply of iron?

Milk is recommended as a sure source of vitamines and minerals. Are we certain that these are present in the milk we happen to purchase? They may be all there, but it is known that their quantity varies according to the food of the cow, and, in the efforts to secure a maximum of lacteal fluid, the proportion of food materials in the milk is anything but that of the cow on her natural pasturage. It looks as if we might come to a time when we would need to prescribe for the child not merely milk which we know to be comparatively free from bacteria and containing relatively right amounts of proteids, sugar and fat, but also milk that fills the specification that there be sufficient representation of the accessory food materials and of minerals. We are all quite aware that there has been adulteration of certain foods and that important elements have been refined out of some of our common foodstuffs, notably flour, but that, for commercial ends, these have been reduced in milk needs also to be kept in mind.

The nutritionists have been shaking down their knowledge of late and are becoming less restrictive in some of their teachings. In fact, they are becoming so liberal as to say that, so far as mere feeding is concerned, if we will restrict our intake of sugar we will be fairly in a way to live long and prosper. This sounds sensible, for sugar (in the amounts available) is man's unnatural food which has such an immense attraction for him that he cannot (by inclination) do other than consume quantities not good for him and, in so doing, overcharge his blood stream with this substance to its impoverishment in other substances needed for the best conditioning of all tissue.

THE TOLL OF THE STREETS

Progress is not always an unmixed blessing. For example, progress in locomotion and transport has not been so. Statistics of the deaths and injuries brought about by automobiles and motor traffic generally can be fitly characterized only by the word appalling. With monotonous regularity announcements are made in the daily journals that so and so was killed in an automobile accident or was knocked down and seriously injured while attempting to cross the street and sometimes an accident on a large scale takes place in which several people are the victims of careless driving or of untoward circumstances.

The inhabitants of this country seem to have become inured, to a large extent, to this kind of thing and to regard it as an occurrence which must be looked for as a customary happening. When subjected to calm consideration, the toll of the streets and roads due to automobiles appears in its true light as a blot on civilization. While the automobile and its kin exact a heavy toll of life and limb in all the countries of the world, America easily occupies the first position in this respect. True, motor traffic abounds in this country more than in any other, but even when this is taken into consideration, in proportion to the number of motor driven vehicles and to population, accidents here are more common by far and, as a rule, more serious than in European countries. It is said that 22,000 deaths and 675,000 serious accidents in this country were one result of automobile driving during 1924; fifteen per cent. of the casualties being children under the age of sixteen.

There appears to be an especial lust for speed on this side of the Atlantic and too rapid automobile driving seems to have become a national obsession. There is also another indictment which may be urged against the abuse of the automobile and that is its bad effect on the nervous system. The coming of motor transport was coincident with the high tension of modern modes of living, and really the advent of the automobile and its development appears to have been a factor largely responsible for the stress and strain

of modern existence. The high speed automobile has made and makes for high speed life, and this kind of life renders the individual restless and nervous, his blood pressure rises, and eventually his originally strong constitution breaks up suddenly and he dies in what should have been the prime of life from cerebral hemorrhage or heart failure.

A class of the community which suffers grievously from the abuse of the automobile is the pedestrian. Even in this country, in which almost every one owns an automobile, there are still a goodly number of persons who are pedestrians by choice or through lack of means. Such persons suffer both in nerves and limbs from the ubiquitous automobile or the rushing motor cycle. Crossing the streets is not only often dangerous but nerve racking and, moreover, the traveler on foot is not always treated with the consideration that is his due. The automobile has taken its place as the popular means of transit of the American people, and the lust for speed is gratified as far as is possible. There are some streets in some cities in which the traffic is so regulated that comparative safety is ensured the walker in crossing. But in many streets in many cities crossing is attended with risk and tries the nervous system somewhat severely.

The perils of the pedestrian are many and obvious in any American city and this remark applies with equal force, to a lesser extent, to the country, where although traffic is of course less, regulations are more frequently evaded, and there are opportunities for accidents, such as steep declines, sharp turns, and, above all, level crossings which very rarely exist in the towns. However, the danger of accidents in the country does not greatly concern the pedestrian, but mostly the drivers and occupants of motor driven vehicles, as the walker generally avoids, as he would avoid the plague, country roads favored by motorists.

There is no intention in this editorial to write a diatribe against automobiles or motor traffic generally; that would be indeed "kicking against the pricks," but the intention is to inveigh against the abuse of a means of locomotion and transport which has revolutionized our views of traveling by road and to point out that it is incumbent on the authorities to protect the nonmotoring public against the drivers of motors and the motorists against themselves. The list of deaths and injuries due to this cause is too great to pass over as a part of the price to be paid for progress, especially when it is a matter of common knowledge that in cities a fair proportion of fatalities and injuries are preventable. On the whole, the regulation for the protection of the public at large in big cities is well conceived and efficiently carried out. A large number of accidents are owing to the carelessness of foot passengers and to the carelessness and ignorance of drivers. The fact also must be borne in mind that "material progress in all that concerns movement has been so rapid that it has outstripped man's rate of adaptation." Neither our roads nor our streets nor our nervous systems are adapted for the automobile. Most of our city, town and country streets or roads, and this is the case in Europe more than here, were built in an era when men not only knew not of the automobile but did not dream of it. Roads and streets are therefore too often narrow and winding.

The true remedy for the existing state of affairs is to construct everywhere, both in town and in the country, streets and roads fully adapted to the use of the automobile. This, while expensive, seems to be the only effective way of securing safety, or at least comparative safety, for the public and the motorist alike. In the meantime, strict protective regulations should be enforced in every city and town and in every street of city and town. The toll of the streets calls for prompt action.

MEDICINE AND DENTISTRY

Italy was, at one time, the world's centre of medical training. William Harvey sat at the feet of an Italian professor before entering upon his career.

Italy seems again at the front in making it, by royal decree, obligatory that all dentists must be profesionally qualified in medicine and surgery and that every medical graduate must also acquire a considerable knowledge of dentistry. At last the teeth are to be recognized, at least in Italy, as a part of the human organism as much as the eye or the ear, and not as so many stones which Nature threw into our mouths for good measure and which have no physiological connection with the other bodily structures.

We are moving, or at least making a gesture, in this direction in this country in combining (as has been done at Harvard) medical and dental education under one supervision. The Italians are far ahead of us, however.

In this connection it is interesting to note that in another foreign land, the province of Natal, South Africa, advance regulations in regard to professional conduct of dentists have been set up which should make us sit up and think. "Any dentist entitled to practise in Natal who shall publicly exhibit specimens, appliances or apparatus of a dental or other nature; or advertise either in the newspapers, or magazines, or by handbills or stationery, billheads, telephone or other directories, or by any other similar agency; or attempt to attract patients by means of advertisements published in newspapers, or circulars.

or by handbills, describing methods of practice, patented or secret processes, or of such nature as to indicate claims of superiority over other practitioners, or depreciating the value of their work; or publish or allow to be published, or exhibit or allow to be exhibited in any place whatsoever, his scale of professional charges, whether fees alone are mentioned, or cheapness or other advantages; or display or allow to be displayed, his name or occupation or both in any window or signboard or use any advertising sign other than the usual nameplate recognized by the medical profession; or practise in any other name than his own; or fail to comply with any notice issued by the council regarding advertising in breach of this regulation; shall render himself liable to be adjudged by the Medical Council to be guilty of disgraceful conduct in a professional respect, and to have his name erased from the register."

If we had regulations in this country which would do no more than remove the display of artificial teeth from our main streets, they would be a decided advance towards a civilized community.

We may learn much from Italy and from Natal.

THE PRACTITIONER AND THE VENEREAL DISEASE CAMPAIGN

During the days of the war when the necessity for conserving the manpower of the nation was uppermost in everybody's mind, the venereal disease problem occupied the minds of a great many persons in the medical profession and the lay public. It is trite to say that the need for warfare against the venereal diseases did not cease with the Armistice; that the necessity for the conservation of the nation's man power is just as real in peace as in war. Yet unfortunately there are a good many people in the medical profession who do not realize this, or if they do are not willing to give heed to it.

Great headway has been made by the Public Health Service in the reduction of morbidity rates of the venereal diseases and the medical profession has played a considerable rôle in the production of this result. But the indications are that the medical profession is not as of old taking as active an interest in this matter as it should. The appropriations which the federal government has made for the conduct of this work have been gradually cut and in the carrying out of the economy program there is grave danger that this very necessary and useful activity will be starved to death.

The federal government began the antivenereal disease work for the nation. It has not yet completed the job in this regard. The States still need assistance, aid and advice in carrying out their legislative, curative, educational and eradicative measures. The dignity and influence of the federal government is necessary in order that the program for the various States may be uniform; that their educational work shall be along certain well worked out lines; and in order that advantage may be promptly taken of the discoveries made by research. This is no time for the practitioner of medicine to lose interest in this matter. It is one which concerns him and his family as well as the entire community, and the necessity for the conservation of the public monies is not such as to require the federal government to withdraw its forces from the battle against the venereal diseases.

HEART DISEASE AND RHEUMATISM

Heart disease has increased in civilized countries and is now among the first three most deadly maladies known. Indeed in Great Britain in 1923 heart disease in various forms stood at the head of the list of mortal diseases. However, as the socalled rheumatic diseases are prevalent in that country and as certain rheumatic diseases are notoriously the precursors of heart diseases this is not to be wondered at. But, as said before, heart disease is quite common in all civilized countries and therefore as some forms of rheumatism are known to bring about heart disease, the rational treatment is to prevent cardiac complications by preventing rheumatism.

A valuable report on The Incidence of Rheumatic Diseases has emanated recently from the British Ministry of Health. This report is peculiarly valuable because it deals with the observations of general practitioners who are also insurance practitioners, commonly known as panel doctors, which have been prepared by a committee of the medical staff of the Ministry of Health. It consequently covers a wide range as it is the general practitioner who sees diseases in their early stages, and represents a combined effort including a team inquiry of general practitioners. In no case is the cause of rheumatism known and it is hard to stimulate public interest in a disease of unknown origin.

The report throws out two suggestions which of course have been suggested frequently previously. Portals of entry are of importance, the tonsils being under grave suspicion. According to the report "fifty per cent. of the patients with acute rheumatism had enlarged or septic tonsils, and only two per cent. of patients with acute rheumatism had a history of having their tonsils removed." Again, dental sepsis has for long been suspected as providing foci for spreading toxins and provoking an attack of rheumatism. There is no intention to attempt to show that these septic conditions may be accounted as first causes; only the suggestion is made that fur-

ther research on the subject is required. Cause must not be confused with effect. It may be rheumatism predisposes to septic conditions and not septic conditions to rheumatism. This is an old battle ground of medicine and is a question that if elucidated would unravel the tangled skein considerably. In any event mouth, teeth and tonsillar defects should be treated effectively early and promptly, for whether they be causes or effects of rheumatism, their continued existence is prejudicial to the health of the patient.

With regard to the avoidance of heart disease then there is need in rheumatic people to prevent the onset of heart disease and with this end in view the report advises thus: "The concentration of acute rheumatic cases in a special hospital with cardiological and pathological departments, preferably situated in a country district, would probably be followed by a great advance in our knowledge of the disease and of the prevention of valvular disease of the heart." It seems that if heart disease is to be largely prevented that first the problem of rheumatism must be solved. It is believed by many that chronic rheumatism is due to a toxic cause and that these toxins originate in the gastrointestinal tract brought about by long continued intestinal stasis, which in turn is the result of errors of diet, lack of sufficient exercise, fresh air and so on. There may also be, as Llewellyn has suggested, a socalled rheumatic diathesis. At any rate, it appears to be reasonably certain that a great deal of heart disease will be avoided if rheumatism is prevented, and in order to effect this successfully the causes of rheumatism or of socalled rheumatism should be thoroughly probed. In the meantime certain clearly indicated precautionary steps should be taken, as careful and suitable diet, a sufficiency of fresh air and exercise and keeping the organs of excretion and elimination working freely and regularly.

IN THE CAUSE OF MEDICAL SCIENCE

The list of those who have sacrificed their lives to the cause of medical science is long and is being added to constantly. Since the discovery of the x ray and radium, the roll of martyrs of those who have employed it for the benefit of their fellowmen, is a formidable one. The latest victim is Professor Bergonie of Bordeaux, who has just died from the effects of radium burns. In the scant thirty years since 1895, when Röntgen announced his discovery, there have been no fewer than 140 such casualties among persistent workers in this branch of medical scientific treatment. Most of these have been more or less obscure toilers, such as young laboratory assistants, journeymen radiographers, and the like. Yet there are also some very illustrious names on this roll of honor.

Antoine Henri Becquerel, of the *Musee d'Histoire Naturelle* at Paris, distinguished as the discoverer in 1896 of the radioactivity of the metal uranium, is the earliest known sufferer. He carried a small tube of radium and burned his fingers severely. The lesions healed, however, and he was not injured permanently. The radium workers soon learned to protect themselves, and it has been the workers with the x rays who have been the ones unwittingly to lay up suffering for themselves in the years to come. It took the x ray workers several years to realize the dread significance of the socalled x ray warts. It is indeed from these earlier workers that the long list of killed and injured is mainly drawn.

Nowadays both radium and x ray are so protected that they are harmless to the operator and it is doubtful whether there are any cases of x ray or radium cancer today which do not date back ten years at least for their inception. The harmful potentialities of x ray and radium seem now to have been thoroughly explored and protected against. While the exploration has cost many lives, the experience gained has been valuable, and there is no doubt that these martyrs to medical science would be the first to acclaim this fact. Professor Bergonie and the others who have heroically laid down their lives in the cause of medical science and for the benefit of their fellow creatures have not made the sacrifice in vain. They have died as truly as any heroes of the battlefield, that others might live, and are more glorious as heroes of peace than of war. Moreover, as the result of their efforts both discoveries are thoroughly established as safe and healing agencies of the highest value.

INSURANCE WITHOUT MEDICAL EXAMINATION

Several months ago one of the largest and best known life insurance companies of the country made the surprising announcement that thereafter on business examined within two years, additional insurance up to $10,000 would be issued without medical examination. Another company had already set aside one month a year during which this privilege was available, and others conceded the writing of twenty year endowment policies up to $2,000 without medical examination, all showing a tendency toward unexamined business.

Protection is afforded by the fact that this privilege is open only to those who have been examined within two years. A written statement of health is required which is an additional safeguard. The object was, according to the company, to strike the average, not to segregate a highly superior group. British and Canadian companies have written unexamined business with great success. The Sun Life

Insurance Company has written this type of business since 1902, and has improved the status of the class until the cost of the insurance is the same to them as to those who have been examined.

The *National Underwriter* says in regard to the matter that "the success of group insurance in the amount of business being written without examination is advanced to show the practicability of insurance without examination. With an inspection report required and reliable agency force, there is no reason why an average group should not be obtained, is the opinion of those advancing the plan. A number of states require medical examination, and in these states of course the plan cannot be put into effect. . . . It can probably be predicted that, if this practice of writing insurance without examination becomes general, the law will eventually be repealed or waived in all the states."

SYPHILIS AS A CAUSATIVE FACTOR IN HEART DISEASE

In a recent report the Division of Venereal Diseases of the United States Public Health Service states that, if the figures for heart disease given in the latest census are correct, syphilis may be held responsible for fifty-two per cent. of all deaths resulting from heart trouble, amounting to 88,417 fatalities. The census figures referred to cover the registration area, which comprises 87.6 per cent. of the population of the country. They show that heart disease in 1923 was responsible for 170,033 deaths, as compared with 105,680 deaths caused by pneumonia and 90,732 by tuberculosis. Syphilis is credited with causing 15,811 deaths in the census, and if to this number we add the fifty-two per cent., or 88,417 fatalities, the result is a total of 104,228 deaths caused by syphilis, exclusive of deaths caused by some other diseases which are in many cases the result of syphilitic infection.

Experiments in Paris have apparently indicated that seventy-six per cent. of syphilitics suffer from heart disturbances. Autopsies on 155 persons known to be syphilitic showed 115 cases in which vascular lesions of the heart were present.

News Items.

Health Survey of Memphis.—Dr. Haven Emerson, of New York, is conducting a health and hospital survey of Memphis and Shelby county, Tennessee, on the invitation of the mayor of Memphis.

Change in Editors.—Dr. Frank A. Rector, formerly of the Conference Board of Physicians in Industry and the National Industrial Conference Board, is the new editor of the *Nation's Health*, succeeding Charles E. A. Winslow, Ph.D. of Yale University.

Theatrical Hospital Plans.—Dr. George O'Hanlon, general medical superintendent of Bellevue and Allied Hospitals, is to become vice-president of the new Theatrical Hospital of New York. The hospital will occupy what is known as the Ziegler Town House, at 2 East Sixty-third street, on the completion of alterations.

Graduate Work at Tulane.—The graduate school of medicine of Tulane University is to be reorganized to meet more fully the recommendations of the Council on Medical Education of the American Medical Association; it is expected that the reorganization will be completed for the coming college year.

British Medical Association Election.—The following officers were elected at the annual meeting of the British Medical Association: Robert George Hogarth, F.R.C.S., of Nottingham, England, president; Alexander Primrose, M.R.C.S., and Frederick N. Gisborne Starr, C.B.E., both of Toronto and C. P. Childe, F.R.C.S., vice-presidents.

Public Health Institute.—The Chicago Medical Society states that in its opinion the Public Health Institute of Chicago is an unethical institute in every sense of the word and that physicians connecting themselves with the institute will be brought before the ethical relations committee of the society. This institute specializes in genitourinary diseases, and uses full page advertising for publicity.

Health Statistics of Metropolitan.—The Statistical Bulletin of the Metropolitan Life Insurance Company, based on 16,000,000 industrial policy holders of this country and Canada, announces a death rate of 8.5 per thousand in 1924, a decrease of 5.2 per cent. from the year before, and states that 1924 is the first year in which every important cause of death showed a decrease from the previous year. Epidemic diseases of childhood showed the lowest rate on record. The diphtheria rate in particular shows a drop of fifty per cent. from ten years ago.

New Director of the Medical Publicity Bureau.—The Medical Publicity Bureau takes unusual pleasure in announcing the appointment of Dr. John James McNulty as its active director. Dr. McNulty, who is the son and grandson of a physician, began his career as house physician to the Presbyterian Hospital of New York. Dr. McNulty is one of the pioneer endocrinologists; his various researches and his experience in the practical aspects of medicine combine to make him an ideal director of the bureau.

Personal.—Dr. David W. Tovey has been appointed as professor of gynecology at the New York Postgraduate Medical School.

Dr. I. Seth Hirsch has returned to this country after attending the recent International Congress of Radiology, Physics and Physiotherapy at London.

Dr. Christopher J. Patterson has resigned as director of the Marshall Sanatorium of Troy, N. Y.; he will be succeeded by Dr. George S. Amsden, of Albany.

Dr. James L. Cochran of Connellsville, Pennsylvania, has been elected president of the Association of Baltimore & Ohio Railroad Surgeons.

Dr. Frederick W. Sears, health officer of the Syracuse district, New York, has been requested to give one of the DeLamar lectures at Johns Hopkins University.

Dr. Mont Reid, of the University of Cincinnati College of Medicine, has gone to China as professor of surgery at the Rockefeller Institute, Peking, China.

Dr. William W. Graves, of the St. Louis University School of Medicine, has been invited to deliver a lecture before the University of Edinburgh.

Hospital News.—The contract has been let for the construction of a new nurses' home at Johns Hopkins, to cost about $650,000, and accommodate two hundred and forty nurses. The Presbyterian Hospital of Philadelphia is conducting a campaign for $1,500,000.

Ground has been broken for the new building of the Mary Immaculate Hospital, at Jamaica, Long Island, to be built at a cost of $1,500,000.

A new municipal hospital will be built by the city of Rochester, adjacent to the new buildings of the university.

A campaign for $1,350,000 for Mount Sinai Hospital, Cleveland, has been started; the funds will be used for dispensary, laboratory, and nurses home.

Fordham Hospital, New York, is to enlarge its nurses' quarters, at a cost of $500,000 to accommodate 122 nurses.

The Board of Estimate of New York has authorized the purchase of Lincoln Hospital, in the Bronx, at a cost of $750,000. The hospital will be under the jurisdiction of the Department of Public Welfare.

The recent campaign of the Beekman Street Hospital, New York, yielded $354,000.

The Bloomingdale Hospital for Nervous and Mental Diseases, White Plains, New York, has received an anonymous gift of $100,000; this will be used as a building fund.

The cornerstone of the New York City Cancer Institute, at Welfare Island, has been laid. Experimental research laboratories will be contained in the building.

The Report of the Subcommittee on the Convalescent Care of Medical Patients of the Public Health Committee of the New York Academy of Medicine

The purpose of this inquiry is to examine into the needs of convalescent patients, to suggest the general principles that should govern in caring for them and to indicate the means best fitted for putting these principles into effect.

Convalescence is a period of transition from sickness to health; a period which, under favoring conditions, can be shortened and, besides, the health of the individual more firmly established. The proper surroundings, the kind and the degree of care and the intelligent oversight that are necessary in order to secure this cannot, in the nature of things, be realized in hospitals for the sick nor, generally speaking, in the homes of the patients themselves, more particularly of the poorer class and those who are in moderate circumstances. These things have been commonly lost sight of. A house in the country, however attractive it may be for well people, is ill adapted to the needs of convalescents because something more is needed in the majority of cases than merely a sojourn out of town. It is concerning these matters chiefly that this report refers.

Although these facts are well recognized, still it is remarkable that more has not been accomplished in the way of making provision for the care of convalescent patients. Homes have been established on no coordinated plan of convalescent relief, without much realization of the various types of convalescence and, in the main, the needs of adult convalescents have received scant attention. No doubt one of the main reasons is that hitherto not enough study has been made of the subject. The subject presents many problems, but these primarily are concerned with the limitations of the term convalescent state, the requirements of the convalescent patient, the different types of patients to be cared for, and the necessary distinctions to be made in the care of them.

DEFINITION

There are two classes of patients in addition to those actively ill for whom special accommodation and care should be available.

Class I. Patients making progress toward recovery from some acute manifestation of disease, but unfitted for a time for full resumption of their duties.

Class II. Dispensary or ambulatory patients with slight or no evidence of organic disease, but with persistent symptoms of functional disturbance which interfere with the proper performance of work.

QUALIFICATIONS

In forming a judgment as to the establishment of the convalescent state, or the fitness of a patient for transfer to a convalescent home, it should be noted that:

1. There should be no probability of an early recurrence of acute symptoms.

2. Fever should be absent and, in Class I, the symptoms should have abated to a decided degree.

3. Strength should be sufficiently regained to enable the patient to be up and about to at least a moderate degree and be able to stand the necessary journey.

4. Patients should not be in need of any medical or surgical attention other than the suitable routine care provided by the respective institution.

5. Patients should be oriented as to time and place and the physical as well as mental state be such as to render them amenable to the convalescent home's discipline and not a source of disturbance to other patients.

6. As far as can be determined patients shall be in such condition as to make the danger of communicating a disease to others unlikely.

THE NUMBER OF PATIENTS ANNUALLY IN NEED OF CONVALESCENT CARE

There are no figures available for a statement of the number of medical cases requiring convalescent care. The medical services of Bellevue and Allied Hospitals contain 490 beds and these, according to the hospital survey of the Public Health Committee of the New York Academy of Medicine, constitute approximately one seventh of the total medical bed capacity of Greater New York, given as 3,319[1]. A rough estimate can therefore be made of the total number of medical cases discharged annually from New York hospitals by using the Bellevue and Allied Hospitals' Reports as a basis for calculation. The average number of medical cases discharged annually from the Bellevue group based on reports of the last decade is 8,000. A further analysis of the Reports permits of an arbitrary grouping as follows: Cardiovascular disease, 1600 or twenty per cent.; respiratory disease, 3,600 or forty-five per cent.; dietetic disease, 1,466 or eighteen per cent.; others, 1,380 or seventeen per cent. Multiplying 8,000 by seven gives then a general idea of the total annual medical discharges. The percentage of these discharged patients requiring and desirous of convalescent care is even more problematical. It has been estimated that fifty per cent. of all discharged heart patients should have the advantage of convalescent care; in another group selected, diabetics, the estimation is thirty three per cent. Taking a low estimate of twenty five per cent of all discharged medical patients would mean a total of 14,000 annually distributed as follows: cardiovascular, 2,800; respiratory, 6,300; nephritis, alimentary and metabolic, 2,520; others, 2,450. If two weeks may be considered the average length of convalescent treatment, this gives a figure of twenty six patients to each bed annually; for 14,000 patients a

[1] *The Hospital Situation in Greater New York*, G. P. Putnam's Sons, 1924, p. 75.

total bed capacity of 540 is required. This estimated convalescent bed requirement represents a minimum in that it applies only to patients discharged from hospitals. In addition to these are to be considered patients in attendance at dispensaries and those taken care of in private practice. No figures whatever are available concerning these two groups. In the Public Health Committee hospital survey the total convalescent bed capacity on the annual basis is given as not over 2,650, of which almost two thirds are for children under sixteen[2]. This leaves, therefore, 880 beds for adults; the beds for purely medical cases would be much fewer in number. It is obvious, therefore, that the supply is far below the present demand. As convalescent homes become better organized and their purpose and effectiveness better known to the public, the demand will become greater. At the present time the proper step is to organize and classify the existing homes, to determine which of these shall deal with medical cases, and to arrange that these latter provide for types of patients in proportion to their numerical ratio. With the proper system in force and the need of homes thoroughly understood the supply should gradually approach the demand.

CLASSIFICATION OF CONVALESCENT PATIENTS

Any comprehensive plan for convalescent homes must be based on a definite classification of patients. Convalescent patients are classified first, according to the type of disease, and, second, according to social or personal status.

It is of the first importance in promoting convalescence that full consideration be given to the character of the antecedent disease, or the nature of the underlying cause since convalescent homes must make provision for the carrying on of definite principles of therapy, diet, exercise and regimen appropriate to each class. Convalescent patients are classified as to type of disease as follows:

1. Cardiovascular.
2. Dietetic.
3. Respiratory.
4. General infections and miscellaneous.

Of the total number of medical patients discharged annually about twenty per cent. are classed as cardiovascular cases; over two thirds of these are cases of true heart disease. Thus of all discharged medical cases, twelve or fifteen per cent. would be included in the first type. Taking cognizance of the fact that patients having the arteriosclerotic forms of disease are in the majority, and that these patients are less frequently benefitted by convalescent care than those suffering from the infectious types of heart disease, it is estimated that fifty per cent. of all heart patients discharged should have the advantage of convalescent care. This means between six and seven and one half per cent. of all medical discharges.

Under the second type are included those patients who will require special dietetic supervision. These are divided into three groups: 1, diabetics; 2, nephritics and those with dietetically related diseases and conditions; 3, those convalescent from disease of the alimentary tract.

The diabetic group includes adolescent and adult diabetes, but not the aged with mild diabetes. This group comprises about two per cent. of medical discharges. Estimating that one third of these should have convalescent care, this means 0.6 per cent. of the total discharges.

The nephritic group includes patients convalescent from the several varieties of nephritis in which nephritic symptoms have predominated, convalescents from scarlet fever, arteriosclerotics (without paralysis), the aged, and patients with high blood pressure. It does not include the socalled cardionephritics in which symptoms of cardiac decompensation predominate. The nephritic group forms about seven per cent. of medical discharges. It is estimated that half of this group, or three and one half per cent. of medical discharges, should have convalescent care.

The group convalescent from alimentary disease includes patients recovering from acute or chronic gastritis, peptic ulcer, dysentery, mucous and ulcerative colitis and severe diarrhea of unknown nature. The socalled visceroptosis patients are not included. This group forms about nine per cent. of medical discharges. Probably one half will require convalescent care, or four and one half per cent. of the total medical discharges.

Under the third type is included convalescents from respiratory disease. They are placed in a special group because of the possibility of infection to others, annoyance to other patients from cough, and the special facilities and supervision required. Bronchiectasis cases are excluded on the grounds that they are chronic cases, although there may be exceptions to this. Asthmatic cases are included only if the determining factor is a bronchitis. Emphysema is also excluded, particularly the senile type. All other of the lower respiratory cases are suitable for convalescent treatment. Consideration should be given to patients recovering from the minor as well as the major manifestations of respiratory disease, more particularly those with short, though sometimes very intense course followed by severe depression, the socalled influenza group.

In estimating the number of this third type difficulties arise. Respiratory diseases are much more often of an epidemic character, and minor epidemics occur so irregularly that it is difficult to arrive at a normal annual average. In providing for this group it must be borne in mind that respiratory diseases are generally limited to a period of six months in the year. A rough approximation of this group would be fifty per cent. of all discharged patients. Probably one half of these, or twenty five per cent., of all discharged patients would avail themselves of convalescent care.

The fourth type is made up of a heterogeneous group not included in any of the others. Numerically, this group constitutes about seventeen per cent. of discharged cases and probably one third or six per cent. would apply for convalescent treatment. On the basis of the estimations given of the medical cases, suitable for convalescent care, the cardiac group would constitute fifteen per cent., the dietetic twenty per cent., the respiratory fifty three per cent. and the miscellaneous twelve per cent.

[2] *The Hospital Situation in Greater New York*, G. P. Putnam's Sons, 1924, p. 287.

Of equal importance with the classification of patients according to the type of disease is the consideration of the social or personal status of patients. Certain racial, religious and social distinctions must be made in order to obtain suitable environment, since this is much more important for convalescent patients than for those acutely ill. Convalescent patients are classified as to social or personal status according to:

1. Age. Provision should be made for the separation of adolescents. Separate homes may be established for this group with provision for each type of disease, but it is more practical to include it with the adult group with a unit separation. Adolescence is arbitrarily fixed between the ages of twelve and eighteen, i. e., from the thirteenth to the seventeenth year, inclusive. Patients over eighteen and up to midlife might advantageously be placed in another group, while those of more advanced age might be put in a third group.

2. Sex. As is the case with general hospitals, there is no necessity for establishing homes for one or the other sex exclusively. Under proper control, a mingling of the sexes in a convalescent home is desirable.

3. Color. Homes for negroes only would be advantageous in many ways. There is difficulty, however, in the matter of establishing and financing such homes. The question of accepting negro patients and arranging for their accommodation in the convalescent home is one for the management of each institution to solve.

4. Religion. With regard to the religious status of patients a distinction is necessary only so far as it concerns dietetic management for orthodox Hebrews. The number of this group of patients is relatively very small, and additional special homes for the group seem unnecessary.

5. Mothers with dependent children. The problem of providing for convalescent mothers with dependent children is a difficult one. During the mother's stay in the hospital arrangements for taking care of her children are made by relatives, friends or the hospital social service. These arrangements may be carried on during the convalescent period. In some instances, however, this may be impossible, and it would be of great advantage to have homes for mothers in which a limited number of well children may be cared for.

6. Ability to pay. Finally, it is desirable that homes be established for convalescent patients who are able and willing to pay a moderate sum for maintenance. The amount obtained from this source would help the home materially. Many patients are able to pay from seven to fourteen dollars a week and in so doing they preserve their independence and are saved the feeling of being recipients of charity. All patients who have been treated in private practice would be expected to pay toward their maintenance. There could be admitted into this group selected patients who pay nothing, but who, through social status and congeniality, fit in well with the pay group. The pay homes from the viewpoint of convalescent care, should conform to the free homes in their provision for the different types of patients received.

CLASSIFICATION OF CONVALESCENT HOMES

The application of the classification of convalescent patients necessitates corresponding classification of convalescent homes. From the viewpoint of type of disease, homes should be established to provide properly for each of the four types mentioned. One home may be arranged for a single type, and for ease of management and the welfare of the patients, this would be a desirable provision. A larger home may consist of a number of units with provision for each type, and while this would make the management more complicated, it would be preferable financially.

GENERAL RECOMMENDATIONS

1. Convalescent homes should be situated preferably outside the strictly urban district but within such distance as to be readily accessible by rail, trolley or bus; a rural location in general would seem preferable to a seaside one, although the latter has its advantages.

2. The home should be designed according to the cottage system. It may be made up of one or more cottage units, each unit having a maximum of fifty or sixty beds arranged in single rooms and two, three, and four bed wards.

There should be adequate bathing and toilet facilities, reading and recreation rooms, proper heating, open porches with screens, a central assembly room and dining room; these latter should be connected by a covered passageway if they are situated in a separate building. A gymnasium is a desirable feature of a convalescent home.

3. A daily schedule should be enforced, hours for rising and retiring, for meals, occupation and recreation being designated.

This schedule must be prescribed under medical direction as it will vary according to the physical condition of the patient and the type of the disease from which the patient is convalescent. The various chores that may be required of the patient should be included in the amount of occupation prescribed.

Recalcitrant or objectionable patients should be discharged and sent either to their own homes or returned to the institution whence they came. Convalescent homes should accept patients from hospitals or their homes with the distinct understanding of this rule, due notice being given, however, to the hospital concerned when such action is necessary. It is a responsibility incumbent upon a convalescent home to see that patients maintain proper social relations and conduct.

4. Certain principles of treatment are necessary for convalescent patients. Through a central clearing agency all patients should be sent to the homes best adapted for their needs. On arrival they will be examined by the physician in charge and a proper regimen prescribed. The outlined regimen embraces the time of rising and retiring, rest hours, physical exercise, walking, gymnasium work, games, or setting-up exercises, social diversions of various sorts, a properly balanced, attractive and appetizing diet. Special efforts should be made to impress habits of personal hygiene such as the care of the teeth, daily regulation of bowel movement, and general bodily cleanliness. Visits should be regulated.

(To be concluded)

Book Reviews

DISEASES OF THE STOMACH

Diagnostik und Therapie der Magenkrankheiten. Von Professor Dr. I. Boas. Mit 145 Textabbildungen und 6 Farbigen Tafeln. Leipzig: Georg Thieme, 1925. Pp. 817.

The well known classical book of Professor Boas on the diagnosis and treatment of diseases of the stomach has just appeared in its eighth and ninth editions. New important material has been added and some chapters have been entirely rewritten. Boas recognizes the great value and help of x rays in the diagnosis of digestive diseases, which should be applied in all cases in which the disease cannot be easily recognized. Whenever the diagnosis can be definitely made out by the usual clinical symptoms and laboratory methods, x rays may be omitted.

With regard to the symptom complex of hyperchlorhydria and its connection with duodenal (or better, peptic) ulcer, Boas does not accept Moynihan's view that hyperchlorhydria is duodenal ulcer. Boas rather contends that hyperchlorhydria or superacidity can exist for a long time as a mere functional disturbance of the stomach, without any organic lesion. Combinations of the two lesions, however, are a frequent occurrence. Treatment with alkalies plays an important rôle in the management of peptic ulcer and also superacidity. Boas does not favor the domination of alkalies at the height of digestion, for according to his experience it rather increases the flow of gastric juice. When the alkalies are given shortly before meals and not in too large doses they exert a beneficial effect and rather diminish the acidity.

The specialist as well as the general practitioner will find no end of useful information on almost every page of this unexcelled book, written by the greatest living expert on gastroenterology.

PATHOGENESIS OF GALLSTONES

Pathogénie des Calculs Biliaires et Indications Opératoires. Par Thorkild Rovsing. Traduction du Dr. Saint-Cène. Paris: Masson et Cie, 1925. Pp. 1925.

In this excellent monograph, translated by Dr. Saint-Cène from the Danish, Rovsing refutes Nounyn's well known theory regarding gallstones. According to Naunyn all gallstones form in the gallbladder on the basis of infection and bile stagnation. Rovsing's large experience, covering thirty years and over five hundred and fifty gallstone cases in which he operated and minutely analyzed the findings, seems to show that the formation of gallstones begins in the small biliary canals of the liver. The process is as follows:

Through a transient toxemia, black calcium bilihumine is formed by the liver cells and thrown into the fine capillary biliary canals. Soon small irregular concretions of calcium pigment with rough surfaces are formed. These tiny concretions reach the gallbladder, often massing together on the way to this reservoir. There, due to their rough surface, they stick to the mucous membrane and grow through precipitation from the bile of cholesterin, calcium bilirubin, and calcium biliverdin, which is cemented together by an organic mucous secretion of the epithelial cells of the gallbladder mucosa. The growth of the calculi is hastened by the concentrating quality of the gallbladder for its bile content and by an undue increase of cholesterin either by cholesterin rich foods or by disease processes manufacturing larger quantities of cholesterin. In a great number of instances the calculi remain in the gallbladder without doing much harm. So soon, however, as the biliary calculi begin to migrate from the gallbladder into the cystic or common duct then morbid symptoms appear. Severe pains (colic), fever, jaundice, and various dyspeptic phenomena make their appearance. At this stage there are already secondary infectious processes present, which, if not checked, may lead to cholemia, empyema, and gangrene of the gallbladder. The best treatment for these active conditions is surgery, removal of the gallbladder with its offending material. The book is herewith highly recommended.

VITAMINES

Theorie des Vitamines et ses Applications. Essais de Vitaminologie par Jean Lorenzini. Avec Préface de Charles Richet. Paris: Masson et Cie, 1925.

This little volume, it is hardly more than a brochure, contains an admirable study of the vitamines and their rôle in nutrition and growth. It is based on a large series of experiments on animals, notably pigeons and guineapigs, and on clinical study of a series of cases of scurvy, infantile rickets, and Barlow's disease. Lorenzini notes that lack of vitamine B may produce symptoms of multiple neuritis in chickens and pigeons, and of scurvy in guineapigs. This avitaminosis seems to have a special affinity for the nervous system, by way of general nutrition. The rôle of the antirachitic vitamine in fixing clacium salts to bone cells, is confirmed. It is probable that the vitamines are complex bodies with reactions in the sphere of metabolism of proteins, fats, and carbohydrates, and in the field of dyscrinisms, as well.

PROCTOLOGY

Treatise on the Diseases and Injuries of the Rectum, Anus, and Pelvic Colon. By J. Rawson Pennington, M.D., F.A.C.S. With Two Plates and 677 Illustrations. Philadelphia: P. Blakiston's Son and Company, 1925. Pp. 933.

This comprehensive volume of over nine hundred pages is a worthy contribution to proctology. The work is divided into three parts. In the first, the general principles of proctology are outlined, the author's well known concept of the splanchnosomatic funnel being described in detail. The only possible criticism of this part is that the section on anamnesis could probably be expanded with advantage.

The next two parts deal with the diseases and injuries of the rectum and anus, and with diseases and injuries of the pelvic colon respectively. These contain a mass of special information bringing the subject down to the presentday point of view in every particular.

The presentation of the material is novel. A general historical introduction precedes the text and each chapter is headed by a historical summary of its own. At the beginning of each chapter also are a couple of excellent portraits of men who have contributed not-

ably to the development of proctology. The illustrations, of which there are well over six hundred, add greatly to the value of the text.

The style is choppy and at times unconventional, but these peculiarities seldom if ever lead to unclearness of expression.

The book will undoubtedly meet with immediate success, as it is easily the best modern American one volume treatise on proctology.

DIAGNOSIS OF NONTUBERCULOUS DISEASES OF THE LUNGS

Die Nichttuberkulösen Lungenerkrankungen im Roentgenbilde. By Dr. Max Cohn. "Würzburger Abhandlungen aus dem Gesamtgebiet der Medizin." Leipzig: Kurt Kabitzsch, Band I, 1924, Heft 10.

This contribution is of interest not only to those who work in the x ray laboratories, but to all who resort to fluoroscopic and x ray examinations in their daily practice. In the introduction the author very wisely remarks that when one does not endeavor to read out of the Röntgen picture more than is rationally possible then the differential diagnosis with the help of the x ray apparatus is of greatest value. In this booklet of eighty pages is given a description and illustrations of croupous pneumonia, bronchial pneumonia, pneumonia following influenza, pneumonia in childhood, also of lung infarct, asthma, bronchiectasis, and the various pneumoconioses. Most interesting are the descriptions and pictures of the rather rare cases of echinococci. The final chapter describes and illustrates abscesses, neoplasms and foreign bodies occasionally found in pulmonary tissue. This volume gives in a concise way the differential diagnosis which, without the x ray picture, in many instances would seem most difficult. It is to be hoped that some enterprising young physician familiar with the German language may honor this valuable contribution by translating it into English.

CANCER

Tumors and Cancers. A Biological Study. By Hastings Gilford, F.R.C.S., formerly Hunterian Professor, Royal College of Surgeons of England. With an Introduction by Sir Frederick Keeble, C.B.E., Sc.D., F.R.S., Regius Professor of Botany at Oxford University & Fellow of Magdalen College. London: Selwyn & Blount, Ltd., 1925. Pp. xii-703.

In spite of the numerous exhaustive studies on tumors and cancers in man, lower animals, and plants, from every possible known aspect, the question of their etiology remains unsolved.

In this book the author has collected all the various views on the sources, genesis, nature, ecology, prognosis, prevention and treatment of tumor growth and disposes of them in an orderly and philosophical manner. The influence of age, diet, reproduction, and civilization on cancer, and the history, diagnosis and structure of these growths are discussed in great detail.

The ultimate cause of cancer seems to be senescence—of the cell, the tissues, and the body. The impression is given that cancer is a disease of disordered growth, due to "degeneration of human material" incident to modern civilization, which is to be combated by a change in our mode of living. Chief among these degenerative tendencies are the cultivation and propagation of degeneration in our schools for defectives, our lunatic asylums, our hospitals, and our other philanthropic institutions; inadequate use of various organs, weakening them and predisposing them to degeneration. Among the organs chiefly affected by the atrophy of disuse are the entire alimentary tract and the reproductive organs.

Nothing new is presented in this massive volume, but it is stimulating reading, and the author's style makes it most interesting. It is an orderly and masterly presentation of the entire subject of neoplastic growth. The bibliography and index of subjects are very extensive.

EXPERIMENTAL PHARMACOLOGY

Einführung in die Pharmakotherapie. Für Mediziner and Naturwissenschaftler. Von Reinhard von den Velden, a. o. Prof. an der Universität Berlin, und Paul Wolff, Dr. med. et phil.-Berlin. Leipzig: Georg Thieme Verlag, 1925. Pp. viii-200.

The knowledge of experimental pharmacology is not generally applied by the general practitioner at the bedside. Chemists and pharmacists engaged in the investigation and preparation of drugs, on the other hand, have not the fundamental knowledge of pharmacotherapy. The usual textbooks offer no assistance in this matter, as they are intended primarily for the theorist or the practitioner. This book is intended to serve as an intermediary and to combine therapeutic indications derived from pathologicophysiological observations with the application of knowledge derived from experimental pharmacological experiences.

The book is divided into three parts in conformity with the three fundamental functions of the body: the repelling of disease, nutrition, and propagation. Pharmacotherapy is nothing else than an attempt to restore disturbed function, not only from the narrow view of symptomatic treatment of the smallest cell complexes, but according to the larger viewpoint of the entire organism. In this way the narrow field of symptomatic treatment is broadened.

The first section deals with the pharmacotherapy of the skin, mucous membranes, tissues, the respiratory system and the uropoietic system. The second section includes the treatment of diseases of the digestive canal, intermediary metabolism, the circulatory and nervous systems. The third section has reference to the genital system of both sexes.

PHYSICAL DIAGNOSIS

A Manual of Physical Diagnosis. By Austin Flint, M.D., LL.D., Ninth Edition, Revised by Henry C. Thacher, M.S., M.D. Illustrated. Philadelphia and New York: Lea & Febiger, 1925.

The fact that this little volume appears in its ninth edition is significant of its value. The importance of a thorough knowledge of physical diagnosis, an art which is frequently slurred over by those for whom the x ray and similar laboratory aids have opened up what is looked upon by them as a short cut in clinical diagnosis, cannot be sufficiently stressed. The x ray and the electrocardiograph, while important in confirming bedside findings, will never take the place of auscultation and percussion or a careful clinical estimate of the physical condition of the patient's heart and lungs. After all they are but ma-

chines. The x ray frequently portrays shadows which need for their ultimate diagnosis a proper physical examination. The electrocardiograph often gives us no information of myocardial damage, which, on the other hand, clinical, bedside observations and physical findings will alone reveal. As aids in diagnosis, the value of laboratory methods should not be underestimated. Each should supplement the other, and one ought not be neglected at the expense of the other.

In the practice of medicine where laboratories are not available, a thorough knowledge of physical signs is of paramount importance. The undergraduate as well as the graduate in medicine will find in Flint's *Manual,* stated in a succinct and clear manner, the methods of physical examinations beginning with inspection, palpation, percussion and auscultation. The chapters dealing with the diseases of the chest and cardiac irregularities are especially to be recommended. Early diagnosis of pulmonary tuberculosis is often a matter of physical examination only and that phase is thoroughly exposed. In addition many other features, such as the diagnosis of thoracic aneurysm and various abdominal conditions, are presented with a simplicity and directness which will repay a most serious consideration of this invaluable work by the internist.

THE FIXATION TEST IN TUBERCULOSIS

La Reaction de Fixation dans la Tuberculose. By Achille Urbain. Paris: Masson et Cie., 1925. Pp. 129.

The value of the fixation test in tuberculosis is still a disputed subject, but this author tries to convert the opponents to its adoption by a carefully prepared monograph in which he defends his thesis. He gives an accurate description of the necessary elements to obtain the reaction in the first chapter. The second chapter deals with the technic; the third with the tuberculous antibodies; the fourth with the application of the reaction in the fixation test as a means to diagnose tuberculosis in human beings; the fifth with the reaction as applied in the fixation test as to diagnosis of tuberculosis in animals. In the concluding chapter the author quotes the opinions pro and con on the value of the fixation test by other authors. He admits that Armand-Delille, Hillemand and Lestoquoy at the meeting of the Hospital Society of Paris reported unfavorable results with the test and came to the conclusion that it would not be wise to rely on the fixation test, whether positive or negative, without clinical corroboration. Aviragnet and Goldenberg reported as a result of fixation tests ninety per cent. positive reactions among the tuberculous having bacilli, and ten per cent. positive among the clinically diagnosed tuberculous in whom bacilli were not found. The author himself reports the most striking results obtained in the diagnosis of bovine tuberculosis and tuberculosis in carniverous animals. In the former he reports ninety to ninety-eight per cent. negative results in absolutely healthy animals. In the carnivorous animals, where tuberculin tests give satisfaction, the author maintains that the fixation test gives far greater satisfaction than any other known method of diagnosis. The book is to be recommended to all laboratory workers connected with sanatoria and to all persons interested in tuberculosis research work.

DUCDAME

Ducdame. By John Cowper Powys. Garden City: Doubleday, Page and Company, 1925. Pp. 458.

This is the first intelligent book on the decadence of the English aristocracy that we have read. It makes no attempt to rescue its characters or put them in any especially good light. tI does not even point the outcome or the cure. It shows a group of people moving in an orbit decreed by centuries gone by. Their acts are quite beyond their control. They are ancestrally "determined."

The *dramatis personæ* are somewhat unreal to the American imagination. The old order has produced two sons, Rook Ashover—now Squire—and his invalid brother. The aged mother's one concern is that the family name shall not die. For years the members of the family have been struggling like insects in a web against the dimly felt futility of their existence. And finally Rook, his mother's only hope, brings home a woman who will not marry him, whom he in his effort to be himself sees no need of marrying. Moreover, she cannot bear him a child. All efforts are now turned to displace the mistress, and entangle Rook with his suitable cousin. The mad vicar and his pliant wife with whom both Ashovers have intrigued, add to the tensity of the story. Throughout runs the breath of stagnation, of a pocket on the earth's surface where the dead are more real than the living.

The struggle for survival of the family is won. A son is conceived. A marriage is perpetrated. There is no further need of the male spider. He dies. And with Rook's passing, the invalid brother begins to thrive. The curse is lifted from him. He no longer has to worry himself into a decline over the perishing of the name of Ashover.

One factor the book has that will make it of importance to readers not so interested in the morbid interplay of the story. The pictures of seasons, of English atmosphere, of tenuous landscape effects so foreign to us, and so imbued in the English soul, are unexcelled. There is a good deal of Nature in the book, a subtle undercurrent to show how the violation of Nature's laws brings rapid destruction.

Medicoliterary Notes.

The Danish National Board of Health supervises the food of inmates of public institutions, basing its regulations on nutritional studies and on national diet habits and customs.

* * *

Short stories for summer reading by entertaining writers are *Mayfair,* by Michael Arlen; *Caravan,* by John Galsworthy; *Bring! Bring! and Other Stories,* by Conrad Aiken; *Mr. Bisbee's Princess,* by Julian Street; *Georgian Stories for 1925,* a collection containing tales by Arlen, Martin Armstrong, E. M. Forster, Aldous Huxley, F. Tennyson Jesse, C. E. Montague, J. C. Squire and others; and *The Old Woman of the Movies,* by Blasco Ibanez.

* * *

Mariemont, Cincinnati's garden village, is nearing completion. Nearly one hundred families have moved in and are enjoying their new homes which combine beauty, sanitation and convenience in a very practicable manner. The idea was conceived and worked out by Mrs. Mary M. Emery, a citizen of Cincinnati.

* * *

Announcement has been made that David Binney Putnam, twelve year old son of the publisher, George Palmer

Putnam, is writing a book to be published in the fall about his voyage with William Beebe on the Arcturus. The title will be *David Goes Voyaging*, and it will have many pictures from photographs.

* * *

The leading editorial in the *Nation's Health* for May is a tribute to Dr. William H. Welch of Johns Hopkins, who recently celebrated his seventy-fifth birthday. It characterizes him thus: "His is a name which, like Osler's, stands rather for a personality, for a ripe wisdom and a rare spirit which have found expression in stimulus and encouragement and guidance for a thousand men and a score of great achievements."

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Recent publications of interest to the medical profession are *The Mental Growth of Children in Relation to the Rate of Growth in Bodily Development*, a report of the Bureau of Educational Experiments, by Buford J. Johnson (Dutton); *Psychology for Child Training*, by Arland D. Weeks (Appleton); *Handbook of American Prisons*, by the National Society of Penal Information (Putnam); *Bibliography of the Writings of Sir William Osler*, compiled by Minnie Wright Blogg (Lord Baltimore Press); *Modern Medical Methods*, by Haydn Brown (Andrew Melrose); *Mental Disorder and the Criminal Law*, by S. Sheldon Glueck (Little, Brown); *The Mental Growth of the Preschool Child*, a psychological outline of normal development from birth to the sixth year, including a system of developmental diagnosis, by Arnold Gesell (Macmillan); and *Things and Ideals*, essays in functional philosophy, by M. C. Otto (Henry Holt).

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In a recent number of the *Survey* attention is called to an important but greatly neglected problem—the provision of adequate care for the chronic and convalescent. There are only about ten thousand convalescent beds in the United States, so an increase in their number is of the greatest importance. Such an increase would make two significant contributions to medical care and treatment, namely, it would provide facilities for cases now being improperly cared for in their homes; and second, it would relieve the hospitals of the burden of caring for cases which do not actually need hospital treatment with all its many and large expenses. The article states: "By providing the comparatively inexpensive facilities for the proper care of these two types of patients, many communities can postpone for a considerable time the building of costly hospitals which seem necessary at a casual glance to meet the present need, and can ensure the most effective and lasting results from the use of hospital facilities already in existence."

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To provide for a group of fellowships in neuropsychiatry with special emphasis on child guidance work, the Commonwealth Fund of New York City has granted to the graduate school of medicine of the University of Pennsylvania the sum of $12.000 for three years. . . . A physician in order to be eligible must present the following minimal qualifications: 1. age from twenty five years to thirty five years inclusive; 2, graduate of a class A medical school; 3, one year's approved internship; 4, satisfactory references; 5, approval of personal and professional status. Each fellowship will be granted upon the basis of three years' work —one year in basic sciences, one year of clinical work in neurology, psychiatry, and child guidance, and one year of clinical research in the field of child guidance. . . . *Mental Hygiene Bulletin.*

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The Republic of Chile, by a single stroke of legislation, has created a Division of Social Hygiene which has police power for the enforcement of preventive measures. It has for its function the dissemination of information about venereal diseases, the creation of social hygiene professorships, and the suggestion of types of elementary school instruction in social hygiene. It is further vested with the power to repress and control prostitution. Any woman prostitute declared to have venereal disease is to be confined to a hospital during the period of contagion. Those refusing treatment are to be sent to a reformatory. Provision is also made for injunction and abatement measures making it possible to close up as a nuisance any building which the owner permits to be used for purposes of prostitution. Advertisements relating to patent medicines for the cure of venereal diseases are not to be accepted for publication in newspapers and magazines, unless endorsed by the Division of Social Hygiene. A medical certificate of good health is required from both men and women before marriage.

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An editorial in a recent number of the *Nation's Health* comments upon the fact that because we are civilized it does not necessarily follow that the conquest of preventable disease is accomplished. The very progress of civilization itself is constantly creating new dangers. Wild beasts and poisonous snakes no longer threaten human life on a large scale except in India, and famines and floods are now restricted to Russia and Japan; such plagues as typhus and the Black Death, due to insanitary living, no longer afflict civilized lands, and the intestinal diseases, such as cholera and typhoid fever, seem likely to follow them into the category of medical curiosities. On the other hand acute respiratory diseases, caused by urban life, widespread travel, overheated homes, schools and working places; dietary diseases from artificially refined food, and over eating; rickets from living without sunlight; lead and carbon monoxide in factories, homes and garages; and, last but not least, automobiles upon our highways, take a heavier toll of life than ever tigers or bears could account for.

* * *

The National Committee for Mental Hygiene announces that it has for distribution the following new publications: *Should Nurses Do Intelligence Testing?* by Dr. Frankwood E. Williams; *Changing the Child's Behavior*, by Phyllis Blanchard, Ph.D.; *The Application of Psychiatry to High School Problems*, by Dr. Anne T. Bingham; *Drug Addiction in Its Relation to Crime*, by Dr. Lawrence Kolb; *Standard Neuropsychiatric Veterans' Hospital*, by Dr. Samuel W. Hamilton; *Demonstration Child Guidance Clinics*, report of the Division on Prevention of Delinquency of the National Committee for Mental Hygiene; and Purposes and Activities of the National Committee for Mental Hygiene.

* * *

The cancer rate is very high in Switzerland, second only to that of Denmark, and, among the chief factors in Swiss mortality, cancer ranks third, following tuberculosis and infant mortality, and ahead of the acute respiratory diseases.—*Bulletin of the Office Internationale d'Hygiene Publique.*

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The increased and increasing interest in health is shown by the large number of articles on the subject appearing in popular publications. Among them are the following: Elderly Athletes—Remember, You're Not a 1925 Model! by William Hemmingway in the *Saturday Evening Post;* Fair, Fit and Forty, by Clara Bell Thompson, ditto; Have You Been Vaccinated Lately? by L. D. Parlin, in *Collier's Weekly;* The High Cost of Babies, by Ida L. Allbright, in the *Atlantic Monthly;* Light Refreshments, by Dr. Woods Hutchinson, in the *Saturday Evening Post;* Make Your Sport Fit Your Age, by Walter Camp, in *Collier's Weekly;* and Three Times a Day, by Myron W. Stearns, also in *Collier's. The American Journal of Public Health*, from which this list is taken, suggests that health workers write the editors regarding the articles they publish, commending the good and calling attention to the bad—and adds, "Please send a carbon of your letter to the editor of this department (Education and Publicity) of the *Journal.*"

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Edwin Valentine Mitchell, bookseller and publisher of Hartford, Connecticut, announces that he will publish in the autumn a one volume selection of the best cases from that famous old chronicle of crime, *The Newgate Calendar*, with the original illustrations.

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A recent industrial report states that no employee of the cinnamon warehouse connected with the docks of London (England) has ever had influenza.

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Two articles of special interest in the *Nation's Health* for June are Points in Preventive Psychiatry, by Dr. Edward A. Strecker of the Mental Hygiene Division of the Public Charities Association of Pennsylvania; and Irritations of the Skin Due to Industrial Causes, by Dr. Guy C. Lane, assistant dermatologist in the Massachusetts General Hospital, Boston.

Abstracts from Current Literature

GASTROENTEROLOGY

Studies in Gastric Analysis.—Richard T. Ellison (*American Journal of the Medical Sciences,* April, 1925) presents the following results:

1. Simultaneous fractional gastric analysis from two points in the stomach definitely fixed ten cm. apart produce curves that are entirely similar in their general characteristics except where influenced by biliary regurgitation. The acid values from the antrum are always higher than those from the fundus except where the former are cut by biliary regurgitation. With the bread and water meal there is a tendency for the acid values of the two parts to become equal during the second hour due to the diffusion of the acid through the fluid meal.

2. There is a recognizable difference in the physical properties of the extractions from the fundus and the antrum, this change being due to the comminution of the test substance by the peristaltic activity of the antrum. If this comminution is not found in extractions from the antrum it is evidence that the stomach is not doing a portion of the work it normally should do.

3. The antrum, close to the pylorus, is the best place to study gastric function, for there the stomach has most nearly completed its work on the test material, and the condition, both physical and chemical, in which the test material will be passed on to the duodenum can best be determined.

4. Fractional analysis when properly performed is of great assistance in the clinical determination of the capacity of the stomach for work under test conditions. It must be firmly kept in mind, however, that the fractional feature of the examination does not refer to the contents of the stomach but rather to the work being done by it. It is only by frequent sample extractions of the result of gastric work that we can form any true conception of the course and completeness of gastric digestion.

5. Biliary regurgitation does not pass beyond the antrum into the fundus and therefore its neutralizing effect does not extend to the large mass of food held there, the acidity of which may continue to rise.

6. Biliary regurgitation cannot be considered primarily as a mechanism to neutralize a high gastric acidity, because its influence does not extend to the whole stomach contents, and because it does occur in the presence of an original low acidity. It seems more probable that biliary regurgitation is an expression of the reverse peristalsis caused by a lesion either directly or indirectly irritating the muscular wall of the intestinal tract.

7. Any change in the position of the tip of the tube during the course of the test alters the curve and defeats the object of the fractional type of analysis.

Partial Gastrectomy in Peptic Ulcer.—W. Wayne Babcock (*American Journal of Obstetrics and Gynecology,* April, 1925) points out that primary gastrectomy for peptic ulcer, while often a tedious and difficult operation, has a low primary mortality, comparing well with that of other radical methods for treating ulcer. Convalescence after partial gastrectomy is, as a rule, as smooth as after a single gastroenterostomy, and there is reason to believe that the secondary morbidity, especially for gastric ulcer, is less. While the best method of resection in gastrectomy remains to be determined, replacement by this procedure of other operations for gastric ulcer is already warranted. In duodenal ulcer the field of partial gastrectomy is more limited; it is, however, the operation of choice in certain cases not amenable to gastroenterostomy. For recurrent ulcer or jejunal ulcer following gastroenterostomy, partial gastrectomy is most valuable. The most physiological type of partial gastrectomy is a modification of the Billroth I. The author describes a procedure with telescopic anastomosis wherein resection of the stomach mucosa well above the line of section of the outer wall of the stomach is carried out in order to increase the effect of the gastrectomy. By this means one can remove more of the ulcer bearing and acid activating portions of the mucous membrane with a smaller gastric resection, and by telescoping the end of the duodenum into the stomach and anastomosing it to the divided gastric mucosa, produce a strong reinforced union. Guide sutures are so introduced as to connect the upper and lower borders of the stomach and duodenum two or more centimetres distant from the line of proposed section, and are used to stretch the duodenum against the wider posterior face of the stomach. The gastric sutures are spaced about three times as widely as the duodenal, so that the two tubes are made to fit in end to end fashion. The author has used partial gastrectomy for ulcer or its complications twenty-five times without any operative mortality.

Peptic Ulcer and Palpable Masses.—Howard R. Hartman (*Medical Clinics of North America,* January, 1925) states that a history of gastric complaint and a palpable mass in the upper abdomen is almost dagnostic of gastric cancer, as ninety five per cent. of such masses prove to be malignant. Occasionally, however, an accurate x ray examination which reveals a benign lesion, may substantiate the clinical history so that a diagnosis of peptic ulcer, with an inflammatory mass, can be made. This differential diagnosis is of great importance to the patient because operative interference, if undertaken too soon and without the proper preparation of the patient, is likely to prove fatal. If the patient receives proper and ample preoperative preparation, the inflammatory masses subside and operation is then conducted without the danger of infection and the too frequent sequelæ. To arrive at the correct diagnosis in such cases, one must weigh all the clinical evidence and not forget the high incidence of malignancy, but if the patient's general condition is good, the classical indications of carcinoma are lacking, and there is clinical evidence to support the diagnosis of ulcer, one is justified in the diagnosis of an inflammatory condition subsequent to ulcer, particularly if confidence can be placed in the x ray diagnosis.

Gastric Carcinoma.—Martin E. Rehfuss (*Medical Clinics of North America,* November, 1924) emphasizes the importance of the earliest possible recognition of carcinoma of the stomach by the physician, as all surgical statistics prove that if the diagnosis is made sufficiently early, life can be prolonged and even saved. In spite of irradiation therapy, the knife is the only cure for carcinoma of the stomach in the present state of our knowledge. The following suggestions are offered:

ROENTGENOLOGICAL EXAMINATION

1. This should include careful fluoroscopic study not only in the anteroposterior position, but the lateral one as well, so as to disclose lesions on the anterior and posterior wall.

2. An examination in the recumbent position is necessary in all doubtful cases to reveal lesions in the cardia as well as to visualize the pylorus more perfectly.

3. A small diffuse gastric lesion may fail to reveal its presence on x ray examination, but in ninety-five per cent. of cases the lesion gives roentgenological evidence of its presence.

4. Always suspect a negative defect in the stomach even though it has the dimpled appearance of healed ulcer.

5. Carcinoma of the stomach ought to be treated like an acute lesion.

6. Healed gastric ulcer ought to be repeatedly rerayed owing to the possibility of malignant transformation.

7. A routine Wassermann should accompany the demonstration of every gastric defect.

8. Sins of commission as well as of omission occur, and where a reasonable doubt exists only repeated x raying and a complete and exhaustive study may enable one to reach a conclusion.

REGARDING GASTRIC ANALYSIS

1. Examine the fasting residuum for retention, microretention, pus, blood, and organic acids. These are the cardinal points in that study.

2. Use a simplified test meal, preferably the Ewald meal, which will reveal pathological exudates.

3. A tendency to generally lowered acid output up to total achlorhydria, the presence of increased soluble protein, the presence of organic acids, a tendency toward the reduction of free hydrochloric acid, and an increase in combined acidity, the presence of an increase in total and combined

chlorin, the demonstration of gastric pus and blood throughout the digestive period, are the important points to be sought.

4. It is now generally acknowledged that in a large proportion of cases of gastric carcinoma, hydrochloric acid is still present, and in the majority of cases of malignant ulcer it reaches a fairly high level.

5. The search for evidence of a congestive, ulcerated, infected lesion is usually performed through a consideration of other factors than acidity.

6. An attempt should be made to correlate these two methods of study in view of the fact that they answer different questions. The x ray answers the questions as to form, position, mobility, and alterations in contour, while gastric analysis points out the alterations in gastric work and the evidence of exfoliation or exudation of pathological products from the diseased area.

Rôle of Blood Chemistry in Diagnosis, Prognosis and Treatment of Obstruction in Upper Gastrointestinal Tract.—Charles S. McVicar (*American Journal of the Medical Sciences,* February, 1925) thus summarizes his paper. With the toxemia of high intestinal obstruction, characteristic changes occur in the chemistry of the blood, namely, a rise in the blood urea, a fall in the plasma chlorids, and a rise in the carbon dioxide combining power of the plasma. By a study of the chemistry of the blood, the condition can be recognized early, the severity can be measured, and the progress of treatment watched. No significant variation has been found in the concentration of the inorganic bases of the blood serum in this condition. Tetany should be considered as a possible severe complication of the toxemia, but severe toxemia may exist without tetany. Tetany may be anticipated when the carbon dioxide combining power of the plasma is found to be above one hundred volumes per cent. The administration of sodium chloride sugar, and water, has been found of value in treatment. All cases show a tendency to alkalosis, and the use of alkali in treatment is contraindicated.

Acute Appendicitis at the Boston City Hospital.—D. Joseph Duggan (*Boston Medical and Surgical Journal,* February 5, 1925) states that the accepted treatment at the Boston City Hospital, once the diagnosis of acute appendicitis is made, is to relax the patient with ether anesthesia, make a right rectus incision in the lower abdomen, incise the anterior layer of the rectus sheath, split or retract the muscle to expose the posterior layer of the rectus sheath which is opened with the underlying peritoneum.

If a simple inflamed appendix is found, a simple appendectomy is done by ligating the mesentery to the appendix, crushing and ligating the base of the appendix, severing the appendix with a knife and cauterizing the stump. No attempt is made to invert the stump. When hemostasis is well established, the cecum is dropped back and the area draped with omentum. The peritoneum and fascia are sutured with catgut. For stay and skin sutures silk worm gut is used.

If an abscess is encountered on opening the peritoneum the intestines are packed off with gauze strips wet with sterile saline solution. The abscess is then opened, exudate bailed out with dry gauze strips and the appendix removed if possible. A drain is placed to the bottom of the abscess cavity.

It is well known that the peritoneum can take care of a considerable amount of exudate. Nevertheless when exudate is found the appendix is drained. The presence of pus in the pelvis is always ascertained by dry sponging with gauze especially when in doubt and there is usually doubt in the acute stage or when periappendicular abscess exists. If there is exudate in the pelvis, a long cigarette drain is inserted in the floor of the pelvis.

If spreading peritonitis is found on opening the peritoneum, the simplest appendectomy is done and the pelvis drained. No mopping or irrigating is done. In these as in all other drained cases the patient is returned to bed and blocks placed to elevate the head of the bed—Fowler's position—for forty-eight hours or longer, depending on the case. The postoperative treatment is important and it varies with the different types of cases. The general principle of treatment of keeping the part at rest is continued by confining the patient to bed, forbidding high enemata and cathartics, and discreetly resuming fluid and food intake beginning with small amounts when all vomiting has ceased.

The removal of drains is still a much mooted question. It is correct to say that as a rule the drain to the appendix stump can be removed safely on the fifth day after operation and the drain to the pelvis on the seventh day.

Stay and skin sutures are removed on the ninth and tenth days after operation. In cases which did not require drainage the patients get up about the twelfth day if there are no complications. In cases where drainage is necessary, the patients are kept in bed a few days after all discharge has ceased because of the possibility of hernia formation through the incision.

Appendicitis: When Not to Diagnose It.—S. T. Irwin (*Clinical Journal,* February 25, 1925) says that if disease of the appendix was missed in days gone by, immunity of the appendix is missed just as often today. Formerly lives were lost through failure to diagnose acute disease of the appendix. Today reputations are jeopardized through failure to exclude it in cases of chronic abdominal or other disease.

Cases of abdominal disease which come to the surgeon with a diagnosis of appendicitis, including by the term both obstructive and inflammatory disease of this organ, may be divided into three groups: 1. Cases in which the diagnosis can be confirmed absolutely. 2. Cases in which the diagnosis can be excluded absolutely. 3. A group of cases where no definite diagnosis can be made and the appendix as a cause cannot be excluded.

In group 3 many of the cases show signs of a general abdominal infection in the form of enlarged lymph glands draining the whole of the area of the small intestine. Some of these can be definitely proved to be tuberculous, with or without obvious ulceration of the intestine. In the case of ulceration it is usually possible to demonstrate some sign of obstruction at the seat of the lesion, but for the purpose of this paper one has not considered these in detail. The main point is that there are many cases with a history of abdominal pain, tenderness over the appendix, and often a prolonged history of ill health, in which the diagnosis of chronic appendicitis has seemed probable, and yet in such cases removal of the appendix produces no material improvement. A genuine chronic appendicitis is comparatively rare amongst the obscure diseases of the abdomen, and to make this diagnosis is often prejudicial to successful treatment, may even be a danger, and always is a stumblingblock to a thorough and systematic examination. Practitioners should hesitate before making the speculative diagnosis of chronic appendicitis.

Intussusception.—As a result of his experiences in twenty cases of intussusception, George M. Gray (*Lancet,* January 10, 1925) states that the treatment of intussusception, provided the child is not moribund, is immediate laparotomy and reduction. The incision preferred is a right paracentral one, because in young children it takes no longer than splitting the rectus, and has the advantage of practically no bleeding and much less risk of hernia. Intussusception cases are also notorious for bursting their wounds five to ten days after the operation, and the surgeon is faced with the duty of sewing up again. Gas and oxygen anesthesia with usually a certain amount of ether is preferred by the author. The state of toxemia makes anesthesia easy. Gas and oxygen alone are never persisted with if there is much straining and protrusion of the bowel; ether is usually given just before sewing up to relax the peritoneum and facilitate stitching.

The mass, if very long, is partially reduced inside the abdomen, and then delivered, and the apical portion is then reduced. The use of a hot saline pad and gentle continued pressure facilitate reduction. If difficulty is still experienced, the introduction of a small artery forceps between the sheath and the entering layer and gentle dilatation help considerably. Hydraulic pressure was used in one case.

In the aftertreatment, all cases were given subcutaneous infusion of glucose, two per cent. in normal saline, immediately after the operation. This helped to lessen the effects of shock. Other points are: 1, that morphine is always given if the child seemed at all restless, and 2, that the child is not starved, being fed four to six hours after operation, if awake. In the more severe cases glucose water, seven per cent., is given for twelve hours before giving milk. The

bowels are opened by small doses of castor oil, if they do not move by the third day. The mortality is considerably reduced by: 1, improvement of the general condition of the child, if bad, by infusion of glucose in normal saline solution; 2, by the prevention of further toxemia and shock by gentle and speedy reduction, gas and oxygen anesthesia, or subcutaneous infusion of glucose in normal saline immediately after operation.

Clinical Review of Intussusception.—Eugene H. Smith (*Archives of Pediatrics,* November, 1924) states that a striking uniformity of symptoms renders the diagnosis of most cases of acute intussusception comparatively easy. The symptoms of sudden onset, pain, vomiting, shock, tumor and bloody stools were present in all of the ten cases reported. Pain is intermittent, with definite and fairly uniform quiescent periods; is usually more severe than that encountered in the commoner digestive disturbances of infancy. Vomiting usually accompanies the pain, and when once established, continues through the acute attack. The degree of shock varies greatly, and it not always proportionate to the extent of the intussusception. Tumor may be located in almost any part of the abdominal cavity; may be superficial or deep; is often movable; may be felt to harden during the paroxysm of pain, and its concavity, when present, is always directed toward the root of the mesentery. Blood passed by rectum in the early stages is brighter and contains less mucus and more watery fluid than is commonly seen in the dysenteries.

Experimental Studies on the Entrance of Bile into the Duodenum.—A. Winkelstein and P. W. Aschner (*American Journal of the Medical Sciences,* May, 1925) state that no evidence was found of spontaneous contractions of the gallbladder in the dog, either under anesthesia or when fully recovered. It is possible to empty the gallbladder by manual expression after the sphincter of Oddi is relaxed, with the peritoneal cavity open or closed. The respiratory squeeze, that is, the increase in intraabdominal pressure at the end of inspiration, also effects an expulsion of bile into the duodenum from the gallbladder when the sphincter of Oddi is relaxed. Direct or reflex stimulation of the gallbladder, whether it be by faradization, drugs, hormones, chemicals, or mechanical means, does not cause a contraction of the gallbladder, or an appreciable change in size, or any emptying, in the experimental animal under anesthesia. In an animal, however, which has fully recovered from the operative procedures, following the instillation of twenty-five per cent. magnesium sulphate or the passage of gastric chyme into the duodenum, and not after normal saline, there is an entrance of bile from the gallbladder into the duodenum.

Whether the more normal physiological conditions in the last instance permit of gallbladder contractions sufficiently strong to expel bile seems extremely doubtful from our experimental observations. It is more probable that certain agents, viz., magnesium sulphate and gastric chyme, relax the sphincter of Oddi and that then, the intraabdominal pressure at the end of each inspiration expresses some bile from the gallbladder into the duodenum.

Gastric Function Before and After Gastrojejunostomy.—T. G. D. Bonar (*Lancet,* August 9, 1924) states that gastrojejunostomy allows the stomach to empty more quickly than usual. The food leaves the stomach through the stoma and in a few cases through the pylorus as well. The rate of emptying is increased, particularly in pyloric stenosis from whatever cause, especially in cases of partial gastrectomy with gastrojejunostomy. Gastrojejunostomy in gastric ulcer reduces the free hydrochloric acid value, but the total acidity remains the same; in pyloric ulcer the hyperchlorhydria persists. In cases of ulcers with high acidities gastrojejunostomy does not reduce the acidity to any extent. The same applies to carcinoma of the stomach, depending upon whether a gastrectomy has been done at the same time.

Gastrojejunostomy is only indicated in cases of pyloric stenosis to act mechanically to provide an outlet for food. It relieves the pain caused by the ulcer but does not reduce acidity. There is a tendency too for the formation of gastrojejunal or jejunal ulcers after gastrojejunostomy in cases with high acidity. Medical treatment will be required in all cases when a gastrojejunostomy has been performed to reduce high acidity and to prevent gastrojejunal ulcers. Gastrojejunostomy in pyloric and duodenal ulcers apparently does not relieve the pylorospasm.

Diet and Tissue Growth.—Theodore S. Moise and Arthur H. Smith (*Journal of Experimental Medicine,* July 1924) have investigated the effect of various adequate diets on the reparative process in the liver, using a normal balanced diet, a high fat diet, a high carbohydrate diet, and a high protein diet. The albino rat was used, and the tissue damage produced by choloroform injected subcutaneously, the liver being chosen as a tissue in which a fairly standard injury can be produced. The toxicity of chloroform varies with the diet in the following order of decreasing susceptibility: high fat > standard > high carbohydrate > high protein diet. The reparative process is most active on the standard balanced diet, and there is a complete return of the liver to the normal anatomical picture without evidence of scarring. On the high fat diet the reparative process is definitely delayed in comparison with the others. There are only slight differences between the high carbohydrate and high protein diets which suggest but do not conclusively show a more rapid repair with the latter diet.

Recent Advances in the Treatment of Sprue: Calcium and Parathyroid.—H. Harold Scott (*British Medical Journal,* August 23, 1924) reports that with the administration of calcium lactate and its regulation by parathyroid the disappearance of symptoms occurs early, the ionic calcium returns rapidly to normal, ordinary diet can be resumed in a shorter time, and the beneficial effects are generally steady and permanent. The treatment must not be dispensed with directly the symptoms clear and the condition of things requires to be stabilized, and the drugs must be reduced gradually with a view to seeing that the patient is able to carry on the processes unaided before all support is removed. As a rule a full diet provides all the calcium needed, and the element can be first left off, the regulator—parathyroid—being continued in full doses for another week or so. This is then reduced, and as a rule, can be stopped in its turn a week or fortnight later. If the calcium is given in full doses, but the parathyroid in only half the usual quantity, the improvement is marked, but a little slower as compared with those treated with the full dosage.

Value of the Banana in the Treatment of Celiac Disease.—According to Sidney V. Haas (*American Journal of Diseases of Children,* October, 1924) the treatment of celiac disease may be divided into two parts: 1. Keeping the intestinal tract as free from toxic accumulations as possible, which is best accomplished by a full dose (fifteen gm.) of castor oil once each week, and irrigation of the colon daily with as many liters of bicarbonate solution (fifteen gm. to a litre of warm water) as may be necessary to obtain a clear return. 2. Dietetic. Plain milk should not be given; the most satisfactory substitute is protein (albumin) milk, of which there are several varieties available, such as protein milk prepared with calcium caseinate, lactic acid milk, dry (fat free) milk, unsweetened and rarely sweetened condensed milk, and pot cheese. In addition, broths, white of eggs, gelatin, and, finally, meat may be given. Carbohydrates should be vigorously avoided except as they occur in the before mentioned milk products. Saccharin should be used for all sweetening. There is one exception, namely, sucrose as it occurs in the very ripe banana. This is tolerated perfectly, and herein lies the crux of the matter.

Banana rapidly changes the entire picture of the disease to one of well being. An underripe banana is a starch, an overripe banana is a sucrose with an invert sugar, and like most sugars easily tolerated. A ripe banana usually has a brown skin, or brown mottling. It must have a bland, sweet taste, not acrid, and should never pucker the mouth. The number of bananas offered to a child may be quickly increased by one or two daily until the patient's demand for carbohydrates is satisfied. In one case a rapid increase in the number of bananas was made, so that an infant, aged twenty-four months, took sixteen bananas daily, a short time after they were prescribed. The maximum that a child will take is usually from four to eight daily.

Fats should be avoided as carefully as carbohydrates. They are exceedingly harmful, except as they occur in protein milk and pot cheese. Codliver oil is no exception. When improvement has taken place, butter may be tried. Vegetables may be added early but carefully. The caloried requirement is from two to three times the normal, approximately one hundred calories a pound being required in the early stages of treatment.

Best Surgical Treatment of Gastric and Duodenal Ulcers.—Hans Finsterer (*Wiener klinische Wochenschrift,* July 17, 1924) emphasizes the great advantages of the extensive resection of the stomach for duodenal ulcer in order to avoid the development of a peptic ulcer, which actually did not occur in three hundred of his patients operated upon. Resection of the antrum of the stomach is not sufficient to prevent the hyperacidity permanently and to produce anacidity. The symptoms of the socalled small stomach last only a short time and then disappear, provided there are no adhesions to the efferent coil of the jejunum to retard the emptying of the stomach, and provided the anastomotic opening is large enough, admitting at least three fingers. Gastrogenic diarrheas occur, according to the author's experience, only transiently after dietetic errors. Haberer's improved anastomosis of the Billroth I method can become the method of choice only when the permanent results are decidedly better than with previous procedures (extensive resection and end to side anastomosis). At the present time the immediate dangers of the operation (greater mortality as a result of the insufficiency of the suture) are still too great.

Chronic Duodenal and Gastric Ulcer.—C. H. Peck (*Annals of Surgery,* July, 1924) states that surgical treatment of duodenal ulcer should not be resorted to until medical treatment has failed to effect a cure and it is evident that the case is chronic. The operation of choice is a simple gastroenterostomy without pyloric exclusion. In effecting the operation painstaking apposition of redundant mucous membrane edges safeguards appreciably against postoperative hemorrhage. To this end the running mattress stitch type of suture should be avoided, and a simple continuous whipover stitch used, care being taken to see that every stitch includes all layers of the stomach and gut walls, the mucous membrane of both being purposely left redundant. If spacing is accurate and tension constantly maintained postoperative hemorrhage will not occur. A lasting clinical cure may be expected in at least eighty to ninety per cent of cases treated by simple gastroenterostomy.

Splenectomy.—Ralph C. Larrabee (*American Journal of the Medical Sciences,* July, 1924) says that splenectomy ought never to be decided upon hastily. A delay of several months is generally advisable. Otherwise one may find out too late that he has mistaken leucemia in an aleucemic stage for Banti's disease, or polycythemia for hemolytic jaundice. Even if the patient is quite sick and in a stage of advanced anemia, a transfusion or two and a few abdominal taps will tide him along and perhaps lead to a degree of temporary improvement that will greatly increase the chance of success, beside giving opportunity for study. Reasonable delay will rarely injure the patient's chances and time is a great diagnostician.

Influence of Diet Upon the Liver Injury Produced by Carbon Tetrachloride.—Nelson C. Davis (*Journal of Medical Research,* September, 1924) demonstrated by experiments with dogs in which liver injury was produced by carbon tetrachloride that an all fat diet not only does not protect against injury, but is more likely to induce a maximum of liver injury than is a short period of starvation. Long periods of fasting (judging from analogy with choloroform) are likely to be a dangerous preparation for tetrachloride administration. On the other hand, a few days of liberal mixed, or high protein, or high carbohydrate diets, are more or less protection against injury. Factors of diet therefore exert an enormous influence upon the toxicity of carbon tetrachloride.

Rôle of Anhydremia and the Nature of the Toxin in Intestinal Obstruction.—Thorsten Ingvaldsen, Allen O. Whipple, Louis Bauman, and Beverly C. Smith (*Journal of Experimental Medicine,* January, 1924) report work on the water loss, chemistry of the blood, and nature of the toxin produced in the obstructed small intestine of dogs. There may occur a moderate loss of water, especially in high obstruction, but it is an inconstant phenomenon apparently not related to the severity of the symptoms. An increase in the urea and nonprotein nitrogen occurred in all instances, but with few exceptions the elevation was slight and apparently proportional to the severity of the symptoms. There was a marked decrease of the blood chloride in nearly every intance, apparently related to the frequency of vomiting. A discussion of the chemistry of the toxin found is included.

Studies on the Total Bile.—Philip D. McMaster (*Journal of Experimental Medicine,* July, 1924) states that when a diet rich in cholesterol is given, the amount of the substance in the bile greatly increases. The concentration of the substance per c. c. in almost every instance was greater. In the fasting dog, the cholesterol yield was greatly cut down, and the concentration of the substance per c. c. greatly increased. The cholesterol quantity and concentration in dog bile are evidently subject to profound modification by dietary influences. The changes are not slight and inconstant as the literature would lead one to expect. The cholesterol yield of the bile does not parallel that of bilirubin.

Radium Therapy in Cancer of the Esophagus.—William Hill (*Journal of Laryngology and Otology,* February, 1925) thus sums up his results. In about one third of the cases there was remarkable improvement, in another third there was very substantial improvement, and in the remaining third the improvement was either very slight and fleeting, or there was either no improvement at all, or the patient was rather worse than before. In three cases the procedure was followed by fatal results within a few days of the application.

Hematemesis Without Lesions.—Gustave Monod (*British Medical Journal,* April 12, 1924) reports three cases in which gastric or duodenal ulcer was diagnosed but not found at operation. Two cases showed oozing from probable microscopic lesions. The third case showed bleeding from congestion as a result of duodenal stenosis. The following theories are advanced to account for the hemorrhage: disturbance of the normal reaction of the general nervous system on the visceral system; irritation of the sympathetic vasomotor centres in the tractus intermediolateralis of the medulla, or of the nerve ganglions or nerve endings, and hepatism.

Treatment of Diffuse Peritonitis.—H. P. Marshall (*Northwest Medicine,* March, 1925) says that in diffuse peritonitis the originating focus must be removed; the abdomen must be flushed out without manipulation, sponging or suction; the intraintestinal toxemia should be intelligently treated; dehydration must be prevented; acidosis should be combated; starvation should be minimized; and all complications diagnosed early and appropriately treated.

Relation of Gallbladder to Development of Jaundice Following Obstruction of Common Bile Duct.—Frank C. Mann and Jesse L. Bollman (*Journal of Laboratory and Clinical Medicine,* April, 1925) state that following ligation of the common bile duct, signs of icyerus, that is, bile pigment in the urine, plasma, sclerotics and mucous membranes, do not develop for from thirty-six to forty-eight hours after operation. If the gallbladder is removed when the common duct is ligated, the urine and plasma contain definite amounts of bile pigment within three to six hours after operation, and the sclerotics and mucous membranes are definitely yellow within twenty-four hours. The difference in the rate of accumulation of bile pigment is considered as evidence of the ability of the gallbladder to concentrate the bile secreted by the liver.

Effect of Specific Cholecystitis on Bile Concentrating Activity of Gallbladder.—Jesse L. Bollman, Frank C. Mann and Pierre DePage (*Journal of Laboratory and Clinical Medicine,* April, 1925) produced a specific cholecystitis in dogs by the intravenous injection of solutions of chlorinated soda. The time of appearance and rate of development of bile pigment in the blood and urine of these animals following ligation of the common bile duct depend on the degree of involvement of the gallbladder by this acute process. The facts reported show that the function of the gallbladder of concentrating the bile is impaired, or may be totally lost, in the presence of an acute inflammatory process in the gallbladder.

Protein in the Edible Portion of Oranges.—Arthur H. Smith (*Journal of Biological Chemistry,* February, 1925) reports in the orange juice as burred, but not the fibrous shreds, there is at most 0.2 per cent. protein, all of which is located in the highly pigmented material contained in the chromatophores of the pulp vesicles. The protein is insoluble in water, neutral salt solution, or weak acids, but is soluble in weak alkali. It is not precipitated from its solution by ninety-five per cent. alcohol, nor is it coagulable by heat at neutral, acid, or alkaline reactions.

PEDIATRICS

The Salivary Urea Index in Children.—Joseph K. Calvin and Bertha L. Isaacs (*American Journal of Diseases of Children,* January, 1925) report that their results of the investigations on the salivary urea index in children agree essentially with the work done by Hench and Aldrich more especially in adults. There is a distinct correspondence between the salivary urea index and the blood urea value. The salivary index definitely indicates the presence or absence of urea retention in the body and in the blood. Although the salivary urea index does not give absolutely accurate figures for the blood urea, a clinically approximate estimate of the blood urea is obtained in retention cases by the application of the formula.

This test is especially applicable to children because of the ease with which a specimen of saliva may be obtained. It can be used as a routine method in cases of suspected retention, or in any other cases (especially albuminurias) where the nonprotein nitrogen content is desired. If high indexes are found, denoting retention or a borderline case, further blood studies may be made. In protracted cases frequent salivary index tests may be made with occasional blood urea checks. The salivary urea index should prove a very valuable adjunct to the phenolsulphonephthalein test in the study of renal function.

A Case of Scaphocephaly With Malformations of the Skeleton and Other Tissues.—Marian C. Putnam and K. F. Pelkan (*American Journal of Diseases of Children,* January, 1925) describe a case, the chief characteristics of which together with Hurler's two cases, form a picture differing from any other clinical group: 1. Negative family history. 2. History of the development in the latter half of the first year of a pronounced kyphosis, delayed dentition, a general apathy, which in Hurler's cases amounted to a true mental retardation after the age of two years. 3. Physical examination shows in addition: short heavy bodies; heads of abnormal shapes, one oxycephalic, two scaphocephalic, with open fontanels; no evidence of increased intracranial pressure; infantile type of face with heavy jaw and broad alveolar process; marked dorsolumbar kyphosis; short heavy bones, especially arm bones and clavicles; limitations of movement at elbow and shoulder; short pudgy hands with incompletely extended fingers; pot belly (with herniæ in Hurler's cases); redundancy of superficial tissues; hypertrichosis; corneal clouding.

Feeding of the Abnormal Baby by the Socalled Truby King Methods.—Mildred M. Burgess (*Lancet,* January 17, 1925) draws the following conclusions from a review of thirty-nine cases:

1. An abnormal baby has a great intolerance for fat.

2. It is impossible to feed all abnormal babies on a percentage system if the percentages followed are those at present given for human milk.

3. It is unwise to risk the introduction or increase of fat in the food of an abnormal baby unless there has been no digestive disturbance for some considerable time, and not then if the weight curve is rising satisfactorily without it.

4. The caloric value of the food required by a marasmic baby is probably more than half as much again as its theoretical value, or, to put it another way, the same standard of feeding by caloric values cannot be applied when a baby is exceedingly below its average weight for its age even when half as much again is allowed.

5. It has not been proved that the socalled Truby King method of percentage feeding is the best and only substitute for breast milk. This is evidenced as follows: That in many infants sent out in good health, resort had to be had to breast milk to put them on the right road; that gain in weight and the general improvement, which were first obtained were lost through breakdowns during the course of the treatment, and the total gain in weight was less than would have obtained otherwise; that some babies actually suffered in consequence of the treatment.

6. The difficulty of ascertaining a baby's power of absorption is a vital point, for it may be found that a baby fed on an artificial food, as cow's milk, needs to be given a higher percentage of some of the food elements because in this form he can assimilate only a certain proportion of the whole, rejecting a great deal which is passed in the stools; whereas, in the form the elements are presented in human milk, although in lower percentages, practically the whole may be assimilated.

Significance of Lymphangitis Occurring With Cutaneous Tuberculin Tests in Children.—Frederick Eberson (*American Journal of Diseases of Children,* January, 1925) reports that the significance of lymphangitis with tuberculin reactions is to be considered from the viewpoint of an infection with tuberculosis which in children manifests itself as a glandular disease. The lymphatics are the distributors and the phenomenon of lymphangitis speaks for an active tuberculous process. A glandular reaction following an injection of tuberculin is akin to a more pronounced skin reaction and is in turn an integral part of the most pronounced reaction, lymphangitis, which results from an active sensitization of the lymph channels to the products of the tubercle bacillus.

Concentrated Feeding for Infants and Children.—By the term concentrated feeding Tobias L. Birnberg (*Archives of Pediatrics,* December, 1924) means the feeding of a large amount of food value (in either calories or nem) in a small bulk. There are many kinds of concentrated foods used in pediatrics, but the most common are: 1, Whole milk plus seventeen per cent. sugar; 2, concentrated albumen milk plus ten to twenty per cent. sugar; 3, various butter, flour, sugar mixtures; 4, pastes or thick cereals.

The indications for concentrated feeding are: 1, Vomiting; 2, anorexia and other difficulties in food intake; 3, dystrophy with loss of tolerance; 4, complementary feeding in nursing infants; 5, exudative diathesis; 6, enuresis and allied conditions; 7, in exudates without kidney involvement; 8, asthenic and undernourished children. Concentrated feeding may be of benefit in nervous vomiting, infectious vomiting and in pylorospasm. The forms of anorexia in which concentrated feedings are valuable are: 1, Nervous anorexia; 2, anorexia accompanying acute and chronic infections, especially tuberculosis; 3, anorexia in premature babies; 4, anorexia due to mechanical and inflammatory conditions in the pharynx, as severe tonsillitis, during intubation or pharyngeal abscess where this is due to pain, both a lack of desire and difficulty in swallowing.

The contraindications for concentrated feeding are few, the main ones being: 1, hot weather; 2, dystrophy where the tolerance is unknown and possibly low; 3, among ignorant people where the patient cannot be kept under observation.

Cutaneous Reaction in Allergic Diseases of Infancy and Childhood.—W. Ray Shannon (*Archives of Pediatrics,* December, 1924) states that it is contended that in the interpretation of the cutaneous protein test in infancy and childhood, an erythema must be considered as the indication of a positive sensitization. Five striking cases are cited, in which no results would have been possible had not such an interpretation been made. Further support for this contention is found in the fact that an erythema may frequently be demonstrated to precede a wheal type of reaction in an increasing sensitization, and in that it may also often be shown to follow a wheal in a decreasing sensitization. It is common for the tissues of the allergic individual to react to irritative phenomena in a magnified manner. As a result, it is not uncommon to find some erythema persisting around all of the tests. This does not disprove the original contention, as satisfactory clinical results can frequently be obtained with therapy based upon the most marked reactions. It does, however, demonstrate as fact, that the interpretation of the positive reaction is a relative thing, dependent upon the particular reactivity of the tissues of the particular individual concerned at the particular time.

Fat Absorption in Infants.—Richard C. Tefft (*Boston Medical and Surgical Journal,* May 21, 1925), in an effort to determine accurately the reaction of a human infant to large amounts of fat in the diet, his ability to utilize large amounts of fat, the reaction of varying amounts of fat in the diet on calcium absorption, of calcium on fat absorption and of both on the phosphorus absorption, placed a four months old infant on a metabolism frame and fed very carefully controlled and analyzed diets containing varying amounts of fat and calcium. Accurate determinations of the neutral fat, fatty acid, soap and calcium were made on the stools and daily determinations of the phosphorus excreted in the urine.

The amount of fat excreted, almost entirely in the form of soap, the amount of neutral fat being at all times negligi-

ble, increased steadily as the amount of fat in the diet increased, but the proportion of fat excreted to the fat intake remained approximately constant at about 10 per cent. indicating that 90 per cent. of the fat taken in the diet was absorbed. When the calcium in the diet was very markedly increased these proportions changed to 15 per cent. excreted and eighty-five per cent absorbed. The phosphorus excretion in the urine rose steadily with increase in the fat intake until the patient was on a milk mixture containing about four per cent. fat, after which it remained about constant despite increases in the fat. On this diet fifty-five per cent. of the calcium in the stools was excreted in the form of soap. With marked increases in the amount of calcium in the diet the excretion of phosphorus in the urine decreased rapidly, falling practically to zero on a diet consisting of fat milk with approximately twenty gm. of calcium lactate added daily. Throughout the course of the experiment the calcium excretion in the stools was roughly fifty per cent. of the intake, indicating the probability that an equal amount of calcium was absorbed. This held when the calcium intake was varied from 0.88 gm. of calcium per day to 3.41 gm of calcium a day. The only gastrointestinal disturbance in the course of the experiment was a diarrhea occurring during one of the fat free periods. Throughout the experiment the baby gained at a rate somewhat greater than the average for hospital babies of this age.

Biliary Affections Beginning in Infancy from the Clinical and Constitutional Pathological Viewpoint.—Hans Abels (*Wiener klinische Wochenschrift,* December 18, 1924) states that the socalled biliary colics are frequently due to biliary affections beginning in early childhood, which are recognized only later in life. Girls are affected more frequently than boys. The symptoms are of a functional nature, and are not due to cholelithiasis, but a neurosis of hypermobility.

These children are frequently subjected to appendectomy, after which they remain free from symptoms for a time, but the symptoms eventually return. There is a distinct evidence of a hereditary factor. In addition, these children show a predisposition to all sorts of infections, such as otitis media and, particularly, suppurative diseases of the urinary tract (cystopyelitis). A diminished appetite, constipation and intestinal fermentation are frequently observed. The lower part of the gallbladder is tender and there is a marked defense reaction (rigidity) of the right rectus muscle. Generally, Boas' point to the right of the tenth and eleventh dorsal spinous processes is tender, and the liver is enlarged.

Suitable prophylactic measures are an important part of the treatment. In light cases antispasmodics are sufficient. Psychotherapy is only of transient value. The most important part of the treatment consists in the avoidance of obstipation and intestinal fermentation, and repeated courses of Karlsbad water together with a very strict diet.

Diabetes Mellitus in Childhood and Insulin Treatment.—Richard Wagner (*Monatsschrift für Kinderheilkunde,* January-February, 1925) draws the following conclusions:

1. In light cases, in which the sugar can be reduced dietetically with an amount of carbohydrate that can reduce the acidosis, it is occasionally desirable to give transient treatment with insulin. In such cases the tolerance is rapidly increased with a purely dietetic treatment.

2. For the rapid reduction of sugar and the improvement of the state of nutrition it is occasionally desirable to give transient insulin treatment also in light cases of diabetes. Simultaneous insulin therapy in small doses makes the dietetic treatment easier and may avoid starvation days.

3. In severe cases, underweight, and showing severe retardation in growth, insulin therapy is absolutely indicated, just as in coma.

4. After the child has reached the proper state of nutrition for that particular age, it would be a mistake to force additional weight, and, furthermore, with a slow reduction in diet the previous amount of insulin used should be maintained and then should be reduced only slowly and steplike.

5. The level of the fasting blood sugar content is a better criterion of the severity of the diabetes than the sugar excretion.

6. In the severe cases of diabetes observed, the amount of the insulin had to be doubled during the course of three to four months in order to obtain the same effect.

7. Consequently a permanent increase in tolerance cannot be achieved with insulin in severe cases of diabetes.

8. Even in apparently light cases the increase in tolerance obtained with insulin is only transient.

9. In cases with a high blood sugar content in the precomatous state, the administration of insulin and of fluids is sufficient without a simultaneous administration of sugar. Only when the blood sugar level has fallen below 0.2 per cent. is the simultaneous administration of glucose necessary and advantageous. The equal distribution of the insulin throughout the day and the continuation of the treatment during the night is important.

10. The effect of insulin is essentially a primary effect on carbohydrate metabolism. The inhibition of diuresis and the reduction of the acidosis are secondary effects of the insulin, standing in close association with the evaluation of the carbohydrate. Insulin therapy is a true substitution therapy.

11. In two children, aged three and a half and five years, respectively, there suddenly developed an especially severe diabetes with precomatous symptoms in connection with an ill defined febrile disease and a catarrhal icterus. In these cases particularly the diabetic process was markedly improved after a short course of insulin therapy, so that the insulin therapy could be interrupted. The author considers these conditions as acute states of exhaustion of the island apparatus, which can be markedly improved.

12. In the alimentary intoxication of infants, insulin therapy may be a life saver together with the intravenous administration of glucose.

Pulmonary Tuberculosis in Childhood.—F. G. Chandler and T. W. Preston (*British Journal of Children's Diseases,* January-March, 1925) emphasize the importance of the early recognition of tuberculosis in childhood. In many cases a certain diagnosis is exceedingly difficult, and not infrequently impossible, but the following symptoms and signs are of great help.

First and foremost of these symptoms is a barking, dry, paroxysmal cough at night—often described by mothers as a croupy cough; then vague ill health; fever, especially evening fever, nightsweats, loss of weight, or failure to gain weight.

Of the signs, there may be parasternal or paravertebral dullness; Krönig's bands may be narrowed. Whispering resonance may be heard loudly over the dorsal spines down to the fourth, fifth, or sixth dorsal spine, or even lower. This is the socalled D'Espine's sign, which the authors regard as of value, though, like the other signs, not absolutely pathognomonic of enlarged bronchial glands. Furthermore, even though the glands may be enlarged, they need not necessarily be tuberculous. There may be functional systolic murmurs, but these are of little help in diagnosis. There may be a retraction of the lower lung border, so that there appears to be impaired resonance over one base. Constant râles may appear in any part of the chest. There may be the earliest stage of clubbing of the fingers. For the more gross and obvious signs there may be evidence of a small pleural effusion, or when the lungs are definitely infected there may be the classical signs of dullness, crackling rales and altered breath sounds.

Other forms of chronic infection or toxemia must of course first be excluded: for example, Bacillus coli infection of the urinary tract, infected tonsils and adenoids, otitis media; and one must bear in mind the possibility of a foreign body in the bronchus, and nontuberculous fibrosis, postpneumonic conditions, bronchiectasis and tuberculous glands in other parts.

The symptoms and physical signs having been carefully considered, the following investigations must be made: 1, temperature record; 2, weight record; 3, sputum examination; 4, feces examination for tubercle bacilli; and 5, roentgenography of the chest. A tendency to stigmatize all hilum shadows and striations as pathological and as tuberculous must be avoided.

Pulmonary tuberculosis does occur in infants and childhood, and is not extremely rare. It may run a long, chronic course. It is not necessarily fatal. The earlier stages should be looked for carefully, and for this further diagnostic methods of precision are needed. While it is obviously undesirable to stigmatize every feeble child as tuberculous, it must not be forgotten that thoracic tuberculosis is indoubtedly responsible for much chronic illness in infancy and childhood. The stronghold of the disease is the bifurcation and bronchial glands, and it is probable that from these the lungs are infected or reinfected.

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Medicolegal Notes.

ENTREPRENANT TO COMMIT CRIME UNDER HARRISON ACT NOT PROVED

In a prosecution for dealing in narcotic drugs without being registered, the evidence tended to show that the government inspector, having some reason to believe that morphine and other narcotics were being sold to addicts, and that the drugs were obtained in a certain drug store, sent to this place of business an individual who asked the clerk for a "shot" to be administered presently; later he came back with some marked bills and obtained a large quantity from the defendant, an employee in the drug store, but not a prescription clerk. The Circuit Court of Appeals, Seventh Circuit, held, Bethea v. United States, 1 Fed (2nd) 290, that this evidence did not support the contention that the defendant was entrapped, or was led into the commission of the crime by the government's officer.

In such a case, the court held, it is not necessary for the government to show that morphine hydrochloride is a derivative of opium.

An employee in a drug store, who sells a customer narcotic drugs, the evidence showing that he was not acting within the scope of his employment, was held to be a person who sells or deals in such drugs within Section 1 of the Harrison Act, and must be registered thereunder.

PRACTISING WITHOUT A LICENSE

The Illinois Supreme Court holds People v. Walder, 148 N. E. 287, that the Illinois Medical Practice Act of 1923 "recognizes the different methods of treating human ailments, and prescribes reasonable and uniform regulations for testing the qualifications of persons who desire to practise medicine in all its branches, and of persons who desire to practise some limited form of treating human ailments. This act meets the constitutional objections which rendered void the earlier medical practise acts, and is valid legislation."

The defendant in proceedings for violation of the act by practising chiropractic without a license contended that the act was unconstitutional; first, because "the practise of chiropractic is a useful and harmless calling, which cannot be regulated by the state." The court rejected this contention, and said: "Any method of treating human ailments which, when practised skillfully, can restore a diseased human body to health is capable of doing great harm when practised without care or skill. A method of treating human ailments cannot be both useful and harmless. If it is sufficiently efficacious to be useful, it is at the same time capable of producing harmful results."

The requirement of section 5 requiring the elapse of twenty-two months between the time the student begins his eighteen months' course of study, divided into three six month terms, is held not to be so arbitrary or unreasonable as to be unconstitutional. The court said: "Whatever method of treating human ailments is used by a physician, he should be able to detect readily the presence of disease and prescribe appropriate remedies for its removal. Taking into consideration the subject matter with which the Legislature was dealing, we are of the opinion that the requirements applicable to the limited practitioner are not subject to the charge of being arbitrary or unreasonable, but that they are liberal when compared with the requirements of the same act applicable to persons who desire to practise medicine in all of its branches."

Section 13, providing for the issue of license without examination to graduates of recognized colleges who have passed examinations for admission to the medical corps of the army, navy and public health service of the United States, is held not discriminatory.

HOSPITAL RECORDS AS EVIDENCE

The Illinois Supreme Court holds, Kimber v. Kimber, 148 N. E. 293, that hospital records are admissible in evidence on the same basis as books of accounts, and before they can be admitted in evidence all persons who make the entries are required to testify to their correctness.

ROAD GRADER'S DEATH FROM LIGHTNING HELD COMPENSABLE

The New York Court of Appeals, Rung v. New York, 144 N. E. 889, on the authority of Matter of Madura, 238 N. Y. 214, 144 N. E., 505, affirming 207 App. Div. 879, 201 N. Y. Supp. 942, affirming an award under the Workmen's Compensation Act for the death of a foreman of laborers in the employ of the city of New York, who, while employed in grading a road, sought shelter from a storm under a tree and was struck by lightning and killed.

PNEUMONIA FROM SUCCESSIVE WETTINGS NOT COMPENSABLE

The Texas Commission of Appeals holds, Texas Employer's Ins. Assn. v. Jackson, 265 S. W. 1027, that successive wettings of an employee by rain, resulting in a cold and pneumonia, were not compensable as injuries or personal injuries sustained in the course of employment under the Workmen's Compensation Act, not falling within the definition in the statute of such injuries as "damage or harm to the physical structure of the body and such diseases or infection as naturally result therefrom."

BURNS, ETC., CAUSED BY SODA ASH HELD COMPENSABLE

The Oklahoma Supreme Court holds, Ward v. Beatrice Creamery Co., 230 Pacific 872, that the term "accidental injury" as used in the Workmen's Compensation Act, is to be broadly and liberally construed so as to entitle to compensation where the injury results through some accidental means, was unexpected and undesigned, or may be the result of some mischance or of miscalculation as to the extent of voluntary action.

Burns, scalds, and salivation suffered by an employee, caused by the use of a substance known as soda ash in the process of sweetening cream, in a hot room in a creamery in the course of claimant's employment, were held to be within the operation of the act, the granting of damage for which was within the exclusive jurisdiction of the State Industrial Commission.

Letters to the Editor.

ANTISEPTIC PROPERTIES OF INSECTS

CHICAGO, 1925.

To the Editor:

In the *Journal of the American Medical Association,* for June 13, 1925, is an article on stitching wounds with the mandibles of ants and beetles. I refer to the same practice in my essay on "Surgery Among Uncivilized Races" which appeared in the MEDICAL JOURNAL AND RECORD, July 16, 1921. Moreover, I speculated as to whether the formic acid had any antiseptic properties.

J. RAWSON PENNINGTON, M.D.

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Thoracic Pain*

Its Relation to Visceral and Spinal Disease

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New York

Pain is an adaptation serving to remove noxious irritants, which tend to injure the organism. The discomfort elicited may vary in degree from a sensation of soreness, aching, or dysesthesia to that of intense agony. Under all circumstances it is abnormal, calling the attention of the body to an existing disorder.

All pain is affective in nature. The thalami are the structures which all affective stimuli finally reach. The cerebral cortex, through the corticothalamic fibres, inhibits the thalamic impulses from exerting uncontrolled reactions over the organism. If, however, there is present an extreme state of psychical tension or instability, the cortical supervision over the thalami is diminished and, as a result, there is a release of the thalamic control. This will explain the increased pain reaction of the nervous and excitable, the worried and chronically ill.

Pain varies greatly in intensity and may be described as burning, darting, lancinating, cutting, tearing and throbbing. It may be diffuse, localized, or may radiate along a nerve trunk. The pain may run completely or partially around the body and is then designated as a girdle pain. It may be felt in an area which, on stimulation, is anesthetic. This phenomenon is known as anesthesia dolorosa. Some neuritic pains are increased by pressure while others are diminished thereby, as in lead colic. Milder grades of pain phenomena are the dysesthesiae, which manifest themselves as sensations of numbness, tingling, formication, heat, cold, heaviness, and even tired feeling.

Chest pains may be classified according to their method of production in the following manner. First, those that are due to disease in the thoracic or abdominal viscera and are referred to the chest wall, e. g., coronary disease, aortic aneurysm, splenic disease, gastric and duodenal ulcer. Second, those that are produced by disease in the spinal meninges about the spinal roots. These may be due to an extramedullary new growth as extramedullary sarcoma, or to an intramedullary neoplasm with extension to the spinal roots, e. g., intramedullary gliosis. Infectious diseases like tabes dorsalis and ascending infectious meningomyelitis also involve the spinal meninges. A degenerative spinal cord disease like multiple sclerosis may also extend to the spinal meninges. Third, those processes that involve the bony vertebrae either by pressure erosion as mediastinal lymphosarcoma and Hodgkin's disease, or by tumor formation in the vertebrae themselves as carcinomata and sarcomata or by infectious processes as spondylitis deformans, tuberculous caries and suppurative infections. The pains produced by most of these diseases will be discussed briefly and illustrative cases presented.

The pains which are felt in the chest wall and whose cause is at a distance are known as referred pains. There are just a few facts necessary for a fair comprehension of this phenomenon. The areas to which pain will be referred as well as the hyperesthesia elicited can be understood by knowing the nerve supply of an organ. Let us cite a few examples. The spleen is supplied by the third to the tenth thoracic nerves. A disease in the spleen, as an infarct or a perisplenitis, will encroach upon endings of the afferent sympathetic fibres. The pain impulses will be carried by the axones to certain of the cells in the posterior spinal ganglia of these thoracic nerves. Here the impulses will pass into the spinal cord giving the organism a sensation of pain in the dermatomes supplied by the posterior ganglia stimulated. As a result pain is complained of in the skin areas supplied by the third to the tenth thoracic nerves. Thus any of the abdominal and thoracic viscera which are in connection with the thoracic segments may refer pain to the chest wall. This irritation reveals itself in a peculiar manner. The pain occurs spontaneously and is rarely augmented by deep pressure. There is a hyperesthesia of the skin and at times an unpleasant sense of discomfort is produced on light stroking.

More and more frequently our attention is being called to an apparently insignificant intercostal neuritis only to find ourselves later confronted by all of the dreaded symptoms of a spinal cord neoplasm. At times it is entirely too late for surgical cure or even relief. Tumors of the cord are either extra or intramedullary in location. The extramedullary tumors are either hard or soft. The former are typified by fibromata and the latter by lipomata. The

*From the Neurological Division, Montefiore Hospital.

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most common seat of attachment is about the dorsal roots. Owing to the fact that the roots are enveloped by the meninges, pain is produced when the roots are impinged upon. The pain has all the attributes of a root pain. This root pain usually appears early, is lancinating in character and is situated in an intercostal space. Herpes zoster may be present due to the irritation of the posterior ganglion cells. The pain is usually unilateral. A unilateral pain which becomes bilateral is practically always pathognomonic of a meningeal neoplasm, indicating a sweeping around of the tumor to the opposite side. At times instead of a lancinating pain, paresthesiae of various shades are elicited at the level of the root which is impinged upon. The hyperesthesia later gives way to a hypesthesia or even anesthesia as the root becomes destroyed. There is early a diminution or loss of the epicritic or protopathic sensibility in the involved root area. Often it is observed that severe pain along the distribution of a root will be complained of although the same is anesthetic to even intense stimulation. This phenomenon is known as anesthesia dolorosa. The nerve trunk is not sensitive to pressure.

Case I.—N. S., male, aged forty-seven years. Five months before his admission to the hospital the patient complained of sharp knifelike pains at the level of the xiphoid cartilage which radiated to the right chest both anteriorly and posteriorly. The pain was steady in character being markedly aggravated during the night or upon lying down. He was treated for pleurisy. Some time after the appearance of this pain his lower extremities became weak and unsteady. In a short time they became completely paralyzed. A diagnosis of spondylitis was made. At this period he was admitted to the Montefiore Hospital. Here he presented a level of hyperesthesia along the distribution of the seventh dorsal segment together with signs of a transverse lesion of the cord. On operation an extradural neoplasm was found extending from the third to the seventh dorsal segments. Microscopic examination showed the tumor to be a sarcoendothelioma. Locomotion reappeared on the removal of the neoplasm.

A root pain must be differentiated from that which is known as a neuralgic pain. In an intercostal neuralgia the pain is along the course of the nerve, being sharp and knifelike in character. There are three points in the course of the nerve which are tender spots and correspond to the points where the branches of the spinal nerves make their exits. One area of tenderness is near the vertebral spinous process and is at a spot where the posterior primary branch of the nerve appears. Another area is in the midaxillary region, where the lateral cutaneous nerve is found. The third point is at the costosternal junction where the anterior cutaneous nerve emerges. The corresponding vertebra is at times tender on percussion. Movements particularly increase the pain. A unilateral intercostal neuralgia should always excite a lively suspicion that we might be dealing with a spinal cord neoplasm, tabes dorsalis, spinal caries, or aneurysm.

Intramedullary neoplasms have often been mistaken for extramedullary ones. Often it is found to the chagrin of all concerned that on operation no extramedullary new growth is present. On examination of the cord a uniformly enlarged non-removable lesion is seen. The cause for this confusion hinges on the fact that as soon as the intramedullary process extends to about one eighth of an inch from the entrance of the dorsal roots, a root pain is produced with a level of hyperesthesia. It is important to note that there is another form of pain known as tract pain. The sensation is that of freezing or that of soft wind passing over the skin. An important fact in the differentiation of an intramedullary neoplasm from that of an extramedullary new growth is that the former gives sensory disturbances first and later motor, while the latter gives motor first in the form of weakness and sensory disturbances last.

Case II.—J. W., male, aged fifty-seven. Patient's illness began six years before admission with an intense tearing pain in the left supraclavicular area. Three months later his right upper and lower extremities became distinctly weak and sharp sticking pains appeared in the lower thorax. At times the pain was tearing in character, while at others it was constricting in nature. Several weeks later his left lower extremity weakened. At present he complains of severe tearing pains over the entire left chest. Occasionally they are viselike in type. Physical examination shows an atrophy of the shoulder girdle with fibrillary twitching. The upper and lower extremities show pyramidal tract signs. Pain and temperature sensibilities are lost over the entire right arm, right anterior chest, part of the left upper chest and below the knees. The vibratory sense is lost over the entire body. The onset of the disease with the typical root pain, the involvement of vibration, pain and temperature sensibilities and pyramidal tract signs pointed to an extramedullary neoplasm. However, the duration of the disease with slight progression and the peculiar involvement of the pain and temperature sense point to a syringomyelia with a localized serous meningitis about the roots.

There are two important pathological entities which produce their clinical picture by inflammatory processes upon the nerve roots. I refer to such entities as ascending infectious meningomyelitis and tabes dorsalis. It has been observed time and again that in patients suffering from abscesses, bed sores and pelvic cellulitis, may, after a period of time there develop severe root pains. These root pains correspond to the segments of the cord which supply the affected area. Often these pains and levels of hyperesthesiæ are higher than the root segments supplying the infected area. Orr and Row investigated this problem. They injected bacteria into a nerve. Within twenty-four hours the organisms had accumulated in the lymph spaces which are found on the internal surface of the perineurium. As the organisms passed up the lymph spaces of the spinal nerves and reached a point where the posterior roots became naked, losing their neurolemma sheaths, a degeneration of the posterior roots and the ganglia was produced. The dura about these roots showed a marked inflammatory reaction. These lymph spaces are continuous with those of the pia-arachnoid and with that of the cord itself. The infection passing into the pia-arachnoid spaces proceeds up to higher levels and implicates as a result many

roots far above the root segment first attacked. This mode of extension accounts for the fact that there are in an ascending infectious meningomyelitis several areas of root pains and levels of hyperesthesiæ. The distress produced has the characteristics of root irritation.

Case III.—J. S., female, aged thirty years. Several days following the incision of an infected Bartholin cyst, the patient complained of intense pain localized in the lumbar region. A diagnosis of nephrolithiasis was made. Two weeks later severe knifelike pains appeared in the epigastrium which radiated along the anterior inferior costal borders of the thorax. At the same time she complained of intense pain in the right shoulder. A diagnosis of cholelithiasis was considered. Five days following this attack her lower extremities suddenly became paralyzed. Physical examination showed a spastic paraplegia with severe zones of hyperalgesia over the thorax. A laminectomy was performed on the third to the fifth thoracic vertebrae. Approximately half an ounce of free pus was found exuding up from the spinal canal. The dura was necrosed and the cord and roots were grayish in appearance.

No discussion of pain would be complete with the omission of that produced by tabes dorsalis. The dorsal roots before entering the cord are made up of two groups of fibres. One group is of fine calibre and goes to form the tract of Lissauer. The other group is coarse in character, entering mesially to the dorsal gray horn, and goes to form the Column of Goll and Burdach. Just after entering the cord these axones lose their sheaths of neurolemma. It is here that early cases show the first signs of degeneration. As the pathological process extends, changes in the dorsal roots and in the spinal ganglion cells appear. An inflammatory reaction ensues at the point where the roots enter the cord and lose their neurolemma and a leptomeningitis is produced. As a result of this root involvement pain is caused. The characteristic pain is described as lightning in character. It is one of the earliest manifestations of the disease and often precedes any of the other symptoms by years. It is recognized by the severity and the suddenness of the onset and the lightning rapidity of each separate pain. The pains take the course of root distribution and not that of the nerve. They are short and sharp, striking here and there. The paroxysms may last from ten minutes to twenty-four hours. A pain that persists longer than thirty-six hours is not a common occurrence. It should make one cautious and to consider other causes. The nerve trunks may be painful to pressure during the attack. However, pain sensibility is lost over the nerve on deep pressure later in the course of the disease. Often the lightning pains subside and one boring in nature supervenes. At times these pains are preceded by various paresthesiæ. One case at the hospital complained of tingling and a persistent crawling sensation over the chest wall.

Case IV.—J. B., male, aged forty-two. Two years before admission to the hospital he complained of severe knifelike pains over the anterior and posterior aspects of the thorax. At the same time he experienced sharp shooting pains over both of his lower extremities. These pains appeared during various intervals. Two years after the onset of these pains his gait for the first time became unsteady. Walking in the dark became impossible. Physical examination showed many root levels of hyperalgesia over the chest and lower extremities. All of the classical signs of tabes dorsalis were observed, i. e., staggering gait, positive Romberg, Argyll-Robertson pupils, absence of both the knee and ankle tendon reflexes, delay of the conduction time of pain stimulation.

The neurologist now and then is confronted with thoracic pain produced by multiple sclerosis. Although this is not frequent, it is none the less important—for often this root pain is confusing and leads to unnecessary operative interference. In fact, many cases have been operated upon for a mistaken diagnosis of extramedullary cord tumor. Nonne mentions these thoracic pains in multiple sclerosis and several have been seen in the Neurological Wards of Montefiore Hospital. Recently, a careful pathological study of the roots in such a case was made by Dr. Hassin. He found that the pia-arachnoid was thickened and infiltrated. The thickening was closely associated with a hyperplasia of the mesothelial and connective tissue cells. The infiltration consisted of lymphocytes, plasma cells, polyblasts, fibroblasts and mesothelial cells. The cellular elements and their fragments were freely scattered in the meshes of the pia-arachnoid and in some instances were so densely gathered that the affected region resembled a meningitis. There results clinically a root pain and a level of hyperesthesia. However, the presence of multiplicity of lesions, a history of remissions and exacerbations, the irregularity of the involvement, the loss of the abdominal reflexes, the presence of a bilateral optic temporal pallor, and the triad of Charcot, i. e., scanning speech, nystagmus, intention tremor, should cause a careful investigation of the pain before entertaining a diagnosis of a new growth about the spinal cord.

Case V.—S. F., female, aged thirty-eight. The patient's illness began approximately ten years before admission. She complained of sensations of pins and needles about the lower chest and abdomen, burning pain and itching over the neck and upper back. Six months later her lower extremities felt heavy, the gait became shuffling, the limbs spastic and a viselike compression about the chest appeared. The pains in the back were at times knifelike and at others aching in nature. Physical examination showed most of the signs and symptoms of multiple sclerosis. On operation, the dura was incised and a considerable amount of cerebral spinal fluid escaped. The cord was markedly congested and the veins were dilated and tortuous. The arachnoid was cloudy. No spinal cord tumor was found and an operative diagnosis of a localized meningomyelitis was made.

Many of the ailments that produce thoracic pain are localized in the chest cavity. I refer particularly to such diseases as mediastinal lymphosarcoma and Hodgkin's disease. A mediastinal new growth may reveal itself by a localized pain. The location depends upon the site of the neoplasm. Tumors in the anterior mediastinum generate substernal pain. New growths in the posterior mediastinum initiate pain in the back by causing erosions through the

vertebræ. Masses on either side of the mediastinum cause pains which radiate along the sides of the thorax. They may be sharp and continuous, intermittent, or paroxysmal in character. Along with this discomfort, paroxysmal attacks of dyspnea and signs of intrathoracic pressure are evident. X ray examination usually locates the mediastinal mass.

Case VI.—J. K., male, aged sixty-eight. Patient's complaints began several months before admission with attacks of sharp sticking pains over the right upper chest appearing at irregular intervals. At first they would last for an hour at a time, but later they would persist for several hours. Several months following the onset of these pains there appeared for the first time a small nodule on the back of the neck. In a short while many more nodules appeared in the neighborhood of the first mass. At about the same time that the new masses were noticed, a persistent cough appeared and great difficulty in swallowing was experienced. X ray showed a neoplasm in the superior mediastinum. An excised gland showed the condition to be a lymphosarcoma.

There are three important diseases of the vertebræ that produce thoracic pain and whose differentiation from one another is of extreme importance. I refer to spondylitis deformans, Pott's disease and malignant disease of the vertebræ. Spondylitis deformans is a vertebral arthritis. Various terminologies have been used to designate this disease: osteitis deformans, osteoarthritis and spondylitis rhizomelic. The entire joint apparatus may be involved with the ossification of the intervertebral discs and ligaments. The bone usually becomes hypertrophied and the cartilages atrophied. As a result, the whole vertebral column may be bound into one mass. The pain produced depends upon the extent and the location of the inflammatory reaction. If the process involves the intervertebral spaces and impinges upon the roots before they unite to form the mixed spinal nerve characteristic root pain will result. On the other hand, if the inflammation attacks the spinal nerve itself at its point of formation, the pain will take on the character of a neuritis. The nerve processes may be involved by the extension of the arthritic inflammation to them, or by direct pressure of the exudate, or by pressure of the newly formed bone. The pain is usually complained of in the area of distribution of the nerve and may be unilateral or bilateral. The discomfort varies from that of a dull ache or drawing sensation to that of agonizing paroxysms. It is increased by all movements involving the thoracic vertebrae and is relieved on lying down. Many cases are distressed after sleeping for some time. Apparently, during sleep, the relaxation of the spastic muscles permits the pinching of the nerves by the vertebræ at their exits. At times, the pain may be so severe as to resemble tabetic crises, kidney stone, cholelithiasis, pachymeningitis externa syphilitica, or cord neoplasm. It is true that many of the cases produce little pain, but those that do, invite serious consideration.

Case VII.—W. J., male, aged seventy-four. The patient's illness began two years before admission with the gradual appearance of pain in the right shoulder. This pain was increased on movement and was accompanied by a squeaky sound. In a short while, he complained of a dull pain in the back and on both sides of the thorax. This pain was particularly severe on bending and resulted in a marked limitation of movement. Gradually, the left shoulder became painful and limited in its excursion. The pain was relieved with rest and heat. Physical examination showed the spine to be rigid and the spinal muscles spastic. There was a level of hyperalgesia at the third dorsal segment and first lumbar segment. The x ray showed a moderate degree of dorsal and lumbar spondylitis. The multiplicity of joint involvement pointed to a polyarthritis.

The tuberculous form of spondylitis or caries gives quite a different picture from that seen in other infectious spondylidites. The disease begins practically always in the body of the vertebræ. Rarely does it start in a joint or in a ligament. The bone becomes soft and caseous or a purulent material is produced. This process is nearly always limited to one vertebræ. As the necrosis goes on, the diseased vertebra collapses and the danger of cord compression arises. More frequently, the spinal canal is narrowed gradually by caseous or purulent material producing a chronic pachymeningitis externa tuberculosa. This process presses upon the nerve roots. The compression may take place in the spinal canal as the nerve makes its exit, or in the intervertebral spaces. The first indication of pain is in the region of the affected vertebræ. The pain is exceedingly intense on movement or pressure. The diseased bone is sensitive to percussion and excruciating pain results on being suddenly jolted. These pains come on usually before signs of compression. The early hyperesthesia of the root area later gives way to hypesthesia as the root degenerates. Many of the cases later refer the pain to the terminal nerve ending. At times a herpes zoster and edema of the area involved may be observed.

A large group of the cases complaining of thoracic pain are produced by neoplasms of the vertebrae. Most of the vertebral neoplasms are malignant. The most common form of tumor is carcinoma, which is always metastatic and frequently multiple. Of the primary malignant tumors, sarcoma and osteosarcoma may be mentioned. In carcinoma, the vertebræ are diffusely infiltrated and subsequently become necrotic and soft. Due to the softening, the vertebræ collapse and a gibbus is produced. The nerve roots, as a result, are not only pressed upon, but they are frequently infiltrated by tumor cells. Clinically, the most important sign is pain. This is often remittent in character, and as a result, diagnoses of muscular rheumatism and intercostal neuritis have often been made. The pain is of two types, one of bone, due to vertebral involvement, and the other root due to meningeal invasion. The bone pains are often worse during the night. This may possibly be due to the fact that as a result of general body warmth there is an increased congestion in the vertebræ with resulting pain. At times, root pain may precede any signs of vertebral pathology by years. This pain is girdlelike in nature and has all of the attributes of a root pain. It is increased by jolting or moving. A primary focus should always be sought for in the mammary glands, esophagus, thyroid, uterus, bronchi, stomach and prostate gland.

CASE VIII.—D. G., male, aged forty-eight. Five months before admission, the patient complained of a gradually increasing pain in the right shoulder, right thorax and dorsal spine. The pain was severe, sharp and shooting in character. A diagnosis of arthritis was made and baking was instituted with indifferent results. Gradually, the pain became more and more aggravated in the back and chest. An x ray of the chest was taken and a diagnosis of carcinoma of the spine was made. In a short while he lost all power in his lower extremities. A few months after the first appearance of pain he developed an irritating, persistent cough with an occasional bloody sputum. X ray examination showed multiple metastases in the right scapula, tenth dorsal vertebra collapsed and a mass in the left lower lung. A cervical gland was removed and microscopic diagnosis of adenocarcinoma was reported. Final diagnosis was primary carcinoma of bronchus with metastases to dorsal spine and scapula.

SUMMARY

1. Chest pains may be classified according to their mode of production as follows:

A. Referred pains: Pains in chest wall due to disease in thorax or abdominal viscera. 1, coronary disease; 2, aortic disease; 3, splenic disease; 4, gastric disease; 5, duodenal ulcer; B, Meningeal pains: Pains which are produced by root irritation. 1, neoplastic, a, extramedullary sarcomata, b, intramedullary gliosis; 2, infectious, a, tabes dorsalis, b, ascending infectious meningomyelitis, 3,, degenerative, a, multiple sclerosis. C. Osseous pains: Pains which are produced by encroachment upon the vertebræ. 1. neoplastic, a, sarcomata (primary), b, carcinomata (secondary); 2, infectious, a, spondylitis deformans, b, tuberculous spinal caries.

2. It is of exceedingly great importance to differentiate clinically between pain which is neuritic in character from one that is root in origin.

Nonspecific Protein Therapy in Sensitization Diseases*

Case Reports of Its Application in Migraine, Epilepsy, Asthma and Hay Fever

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The parenteral injection of a foreign protein for the treatment of a variety of diseases is receiving increasing attention and there are several facts of recent development in the clinical application of the nonspecific reaction to sensitization diseases which are of interest.

1. The recognition today that the repeated injection of small amounts of nonspecific protein substances will bring about certain allergic phenomena which induce a state of antianaphylaxis and nonspecific desensitization.

2. The recognition that a number of diseases which until recently have been regarded as of uncertain etiology and indefinite pathology, are considered at the present time probably to owe their origin to protein hypersensitiveness.

3. The recognition that the altered cellular reactivity following protein injections has been found to be of therapeutic value in a number of symptom complexes of disturbed metabolism, included among which are migraine, idiopathic epilepsy, asthma and hay fever—conditions which recent evidence suggests may be classified among the group of socalled sensitization diseases.

In view of these developments it is interesting to recall that in December, 1911, I read a paper before this branch of the Philadelphia County Medical Society and showed three epileptic patients who demonstrated certain clinical results and laboratory findings which followed biological reactions produced by the intramuscular injection of venom protein (crotalin) solution. That report and several subsequent papers (1) have been recently referred to in the literature as early instances of the employment of a nonspecific protein for definite therapeutic purposes.

At that time, now thirteen years ago, and during the next five or six years, the parenteral injection of nonspecific protein substances for therapeutic purposes was regarded with much skepticism by both clinicians and immunologists. As Miller (2) says in a recent article referring to my preliminary report of 1908, "Spangler's treatment appeared so irrational that no attempt was made in this country to verify his results which in the light of recent developments deserve consideration."

During the past decade, however, many clinical reports have accumulated showing beneficial results obtained with the use of a great variety of nonspecific agents. The rapidly accumulating evidence from all parts of this and other countries has led immunologists and the experimental investigators to search for an explanation of the benefits obtained and today there is probably no problem arousing more interest and being more generally investigated by immunologists than the study of the mechanism of the reaction following the injection of foreign protein substances into the human organism.

THE SPECIFIC AND THE NONSPECIFIC REACTION

A review of the various theories which have been advanced to account for the mechanism of the nonspecific protein reaction, while extremely interesting, cannot be discussed in the space allotted for this paper. It is important, however, in order to appreciate the practical value of nonspecific therapy in sensitization diseases to have a clear understanding of the difference between the mechanism of the specific and the nonspecific reaction.

There are two methods of attacking pathological processes. The one is by means of specific

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therapy which aims to influence the cause of the disease—if due to a bacteria, to produce a bactericidal substance; if due to a known specific toxin, to produce an antitoxin; if due to a chemical, to neutralize the chemical agent. The other method is by means of nonspecific agents which, instead of attacking the pathological cause, aim to alter the reactivity of the soil, i. e., to produce a general stimulating effect on cellular activity as a whole—a "plasma activation" as Weischert terms it—by the calling forth of a patient's general resting forces through stimulation of the bone marrow and increased activity of the leucocytes; by enhancing the activity of the endocrine glands with their recognized ability to influence general metabolism; and by shedding antibodies previously fixed in the body "exfoliative stimulation" as Larson explains it.

Petersen terms this mechanism the active stage of the nonspecific reaction. There is, however, also produced by the nonspecific protein reaction an increased tolerance to poisons and toxins due in part to the diminished irritability of the nervous system, as was originally shown by Starkenstein (3). Moreover, Starkenstein, Von Den Velden, Manwaring, Petersen and others have demonstrated that the nonspecific protein reaction alters the permeability of capillary and cell membranes, so that there is possible a freer exchange between the blood plasma and the cells, thus allowing a washing out of the tissue fluids into the blood, as Clark (4) recently wrote. These changes produce certain modifications in the colloids of the plasma which Kolmer and others emphasize as an important factor in the mechanism of the nonspecific reaction.

NONSPECIFIC THERAPY AND ANAPHYLAXIS

The relation of nonspecific therapy to allergic phenomena in general and the part played in immunity by anaphylacticlike reactions produced by parenteral injection of various protein substances has started a widespread investigation and is now admitted by laboratory workers, as well as clinicians, to be of much significance in the fields of biology, pharmacology and therapeutics. While specific protein anaphylaxis is not made use of therapeutically, there is, however, wide use being made of the nonspecific anaphylacticlike reaction for therapeutic purposes, especially for its adjuvant and synergistic action with drugs, organotherapy and some forms of physiotherapy.

AGENTS EMPLOYED

While a large variety of protein substances, such as peptone, proteoses, shattered hemaproteins, milk, crotalin solution, and various serums are being used at the present time to produce nonspecific reactions for therapeutic purposes, the chief difference clinically in the various protein agents employed is largely in the intensity of the phenomena induced. I will not review the relative values of these various agents or the practical advantages in the use of venom protein (crotalin) solution which has been covered in detail in several recent papers (5).

SENSITIZATION DISEASES

With the development of the practical clinical application of nonspecific protein therapy, it is of special interest to note the tendency during the past few years to include among allergic diseases many of the socalled diatheses and systemic disturbances of unknown or indefinite etiology. Such constitutional diseases as rheumatism, gout, arthritis, eczema, some of the protein intoxications and certain disturbances arising from menstruation and pregnancy, all show more or less evidence of allergic or hypersensitization phenomena. In addition to urticaria, hayfever and asthma, regarded as typical examples of the group of sensitization diseases, there has been considerable evidence recently brought forth which points to migraine and idiopathic epilepsy as belonging to the same group of diseases.

In a recent paper on The Treatment of Migraine with Peptone, Miller and Raulston (6) call attention to "certain evidence of the anaphylactic character of the migraine seizure," and in an article by Dr. Joseph L. Miller (2) he points out a number of hypersensitization manifestations in epileptic patients which show evidence of anaphylacticlike phenomena.

While the various diseases of this group present widely different clinical symptoms, it is recognized that they have a number of points in common. They tend to recur more or less periodically; their hereditary characteristics have much in common, pointing to the transmission of a tendency to protein sensitization; the symptoms may be aggravated by nervous influences; after acute infection or pregnancy the symptoms often disappear; an increase of eosinophile cells at some stage of the hypersensitization manifestation is undoubtedly of much significance; and finally, the fact that the symptoms may often be relieved by nonspecific protein desensitization lends additional evidence that such conditions may probably be rightly classified in the group of sensitization diseases.

STAGE OF THERAPEUTIC ACTIVITY

The nonspecific protein reaction is therapeutically active in sensitization diseases during the period of hypersensitivity or when the body cells are being sensitized, i. e., just before anaphylacticlike depression occurs. It is during this period of incubation, the stage which, in a recent article (5), I termed preanaphylactic, i. e., before sensitization is complete, that it is possible to produce, by repeated small size doses of nonspecific protein substances, a condition which corresponds to the antianaphylactic state which occurs in animals after anaphylaxis. This induced antianaphylactic and hyposensitization state, as a rule, is more or less temporary and seems never to last longer than from one to three weeks. This fact accounts for the necessity of repeating nonspecific protein injections at frequent intervals of from seven to twenty-one days in order to keep the patient nonspecifically desensitized.

The question of antianaphylaxis and nonspecific protein desensitization is therefore one of great importance in the application of nonspecific protein therapy to sensitization diseases. Clinical reports also indicate, more and more, that in certain constitutional diseases and diatheses, which show allergic phenomena, protein therapy may likewise produce encouraging results.

EOSINOPHILES IN SENSITIZATION DISEASES AND ANAPHYLAXIS

The more we learn about anaphylaxis in relation to immunity and clinical medicine, the more significance I believe will be attached to the varying percentage of eosinophile cells present in the differential blood counts at various stages of hypersensitization phenomena, and the more will be appreciated the value of the proportional increase of the percentage of eosinophile cells as a guide to the regulation of dose and the frequency of administration of nonspecific protein agents.

An increase of eosinophiles has frequently been noted in sensitization diseases and this fact is being pointed out as one of the most important evidences of the relation of this group of diseases to anaphylactic phenomena. There is a local collection of eosinophiles in the lungs in asthma. In the peripheral blood in both hay fever and asthma, at some stage of the seizure an increase of the percentage of eosinophile elements will be quite uniformly found if repeated differential counts are made. This is also true in certain exudative skin diseases and has been reported in some cases of urticaria and eczema. In cases of migraine and epilepsy, since these diseases have been investigated along the lines of hypersensitivity, a number of reports have appeared to the effect that at one stage or another of the seizure the peripheral blood shows the presence of an eosinophilia.

Since eosinophiles are found increased in various degrees in anaphylaxis and anaphylacticlike states, it would seem plausible to make use of their varying percentage as a guide to the strength of dose and the frequency of administration of nonspecific protein substances which are used to produce anaphylacticlike reactions for therapeutic purposes.

As a matter of fact, since 1912 I have in a number of articles (1) called attention to the fact that repeated small doses of venom protein in the human produce an increase of the percentage of eosinophile cells in the differential blood count. Schlecht's (7) experiments, showing an increase of eosinophile cells in guineapigs and dogs with repeated small injections of various foreign protein substances, confirm my experience.

REGULATING STRENGTH OF DOSE

It would be of the greatest practical value, if a method for regulating the frequency of injection and strength of dose necessary to keep a patient nonspecifically desensitized could be worked out in connection with protein therapy. It might, moreover, be possible, if such a method were established and recognized, to determine when the patient is in a hypersensitization state or is desensitized by noting the percentage of eosinophile cells present in the differential count, without using the biological test of an injection, and having to depend on resulting clinical manifestations.

In my experience with the intramuscular injection of venom protein (crotalin) solution covering a period of fifteen years, during which time more than sixteen thousand intramuscular injections have been given to over seven hundred patients, I have found that a study of the differential blood count before and after injections, with a special reference to the degree of eosinophiles produced, offers a satisfactory guide to both strength of dose and frequency of administration of the protein substance. I have reported this method in detail in previous papers (1, 5), and in submitting it again at this time as a practical guide for the administration of protein therapy in sensitization diseases, I will only summarize my conclusions.

METHOD FOR REGULATING DOSE

As a rule the highest percentage of eosinophiles, following the range of doses (one-four-hundredth to one-fiftieth grain of crotalin solution) which I have used, occurs by the second or third day. In from five to seven days after an injection the eosinophile cells will, as a rule, have dropped to four per cent. or under and the patient may be given another injection. It has been my practice not to repeat an injection if the percentage of eosinophile cells by the fifth day has not dropped to at least four per cent. (Howell's high level of the normal range). Moreover, it has not seemed wise to increase the strength of dose as long as any given strength is producing an eight to ten per cent. eosinophilia on the second or third day after an injection.

Clinical experience indicates that with crotalin solution in doses large enough to produce not more than eight to ten per cent. of eosinophile cells within twenty-four or forty-eight hours after an intramuscular injection, we have an agent which produces a state of cell and glandular stimulation, with a colloidal change of the plasma and altered permeability of the cell walls, which corresponds to that stage in the mechanism of the nonspecific reaction which is of therapeutic value. It is in this state that repeated small sized injections of a nonspecific protein can be used to induce a condition of antianaphylaxis and desensitization.

Case Reports

The practical clinical application of nonspecific protein desensitization therapy by the use of venom protein (crotalin) solution in migraine, epilepsy, asthma and hay fever is illustrated in the following abstracted case histories.

MIGRAINE

Case I.—In April, 1916, a thirty-four year old unmarried forelady came under my care with a history of periodical headaches with which severe vomiting was associated. These had been recurring at four, six, or eight week intervals for ten years or since she was twenty-four years old. A seizure would completely incapacitate the patient for from twenty-four to forty-eight hours. The attacks seemed to be independent of the menstrual period.

This patient's younger brother was subject to convulsions and died at thirty-one years of age after a trephine. Her mother suffered from asthma until her thirtieth year and then migraine developed which disappeared after the menopause. Patient was the second of four children. She was breast fed for four months and then given cow's milk, after which she began to have socalled bilious spells. She had scarlet fever at two years and when a girl says she had much digestive disturbance and constipation. Men-

struation was established at thirteen years, and was always fairly regular. During early adolescence her skin was very sensitive to soaps and she had one attack of skin eruption diagnosed as eczema. She was frequently troubled with hives until she was twenty-four years of age, and then the sick headaches began. Since that time there had been no recurrence of the urticaria.

The patient's eyes were examined and glasses prescribed by Dr. A. O'Malley. Dr. T. J. Byrne treated her nose and sinuses. The urine was negative for sugar and albumin. Blood Wassermann was negative. Alkalinity of blood 176 by the Dare method whose normal average point is 266 (266 milgms. sodium hydrate neutralize 100 c. c. of blood—i. e., the 266 point is normal). Differential leucocyte counts showed an increase of eosinophile cells ranging from six to nineteen per cent. at various times.

Crotalin injections were started and continued at weekly intervals and no migraine seizures occurred from April 16th to September 7, 1916.

During the next six months there were four headache seizures but all without vomiting. The alkalinity of the blood continued to range from 156 to 184. The normal point being 266, her alkalinity was low, and I started to give the patient from thirty to forty grains of calcium lactate by mouth and the crotalin injections were continued each week for two months and then as no headaches had occurred their interval was lengthened to two weeks. With this combined therapy the patient had an interval of seven months without a headache or a vomiting attack. The alkalinity of the blood was increased to 239. At this time the patient decided that the calcium alone would probably be sufficient therapy and I did not see her again for nineteen months. When she did return she reported that the calcium lost its effect six or eight weeks after the injections had been stopped. She had been using, in the meantime, various headache remedies but said she thought she would like to have some more injections as her headaches with the vomiting spells were recurring at from ten day to three week intervals.

Crotalin injections were again started and have been continued, except for one four month interval (during which period she had two migraine seizures) at two to three week intervals for the past three and a half years. The patient also takes from ten to forty grains of calcium lactate daily depending on her prodromal symptoms. This patient has not missed a day's work in the past two years owing to illness, and while she occasionally suffers from headache she has not vomited or had a typical migraine seizure for almost three years. Since she has been kept nonspecifically desensitized the percentage of eosinophiles has ranged between two and seven per cent.

EPILEPSY

Case II.—February, 1921, Dr. L. N. Boston sent to me a forty-one year old hardware salesman who was having convulsions. This man's father suffered from asthma and his mother had migraine. Both parents died from pneumonia. His father's brother had epilepsy.

The patient was the youngest of seven children; he was breast fed and had no spasms when teething. Measles and chickenpox were the only diseases of childhood but from his sixteenth year he had suffered periodically with socalled bilious headaches. He was married at twenty-two and is the father of seven healthy children, the youngest being three years of age.

At thirty four years he had his first convulsive attack on a trolley car; second attack six weeks later. During the seven years before I saw him, i. e., after the convulsive seizures had started, there had been one interval of six months without an attack while taking bromide. For the three years before I started treating him, however, convulsions had been occurring about once a month and several times there were intervals of only two weeks. Twice he had had two attacks in twenty-four hours.

Laboratory examinations included a negative blood Wassermann. The urine contained a moderate amount of albumin but no casts or sugar. The hemoglobin was 78 per cent., the red cells 3,750,000—white cells 6300. Differential count: polymorphonuclears 64 per cent., small lymphocytes 25 per cent., large lymphocytes 5 per cent., eosinophiles 4 per cent., basophiles 0 per cent., transitionals 2 per cent.

Crotalin injections were started and continued at weekly intervals and from February 21st to June 6th the differential count showed on the second or third day after an injection increases of the eosinophile cells ranging from eight to eighteen per cent. From June 6, 1921, to March, 1922, the injections were continued at weekly intervals, but the percentage of eosinophile cells on the second or third day after an injection ranged on the average from four to eight per cent. Only twice did they reach ten per cent. in this nine month period.

If my interpretation of the percentage of eosinophile cells in hypersensitization states is correct, it required from February 21st to June 6th to desensitize this patient nonspecifically. During this three and a half month period the weekly venom protein injections continued to produce a decided increase in the percentage of eosinophile cells; they ranged as high as ten, fourteen, eighteen, eleven, fifteen per cent. From June 6, 1921, to March 3, 1922, a period of nine months, the injections were continued at weekly intervals but the patient remained desensitized according to the eosinophilic index, as only twice did they increase to as high as ten per cent. and their average range was between four and eight per cent. on the second or third day after an injection.

After a year's treatments with weekly crotalin injections, no convulsions having occurred, the interval between injections was lengthened to two weeks. The percentage of eosinophiles continued to remain, with the lengthened interval between injections between three and eight per cent., and no epileptic manifestations having appeared the patient left for a vacation on July 14, 1922. He missed his usual two week injection which was due July 28th and also the one due August 11th. A convulsive seizure occurred August 18th. He had been free from attacks from February 13, 1921, to August 18, 1922, a period of eighteen months. Since this experience he has not missed his crotalin injection every second week and no further convulsions have occurred, now a period of two years and four months. Since crotalin injections were started in this case, now a period two months short of four years, the patient has

had but one convulsion. The occurrence of this seizure at a time when the interval between crotalin injections had been allowed to go over twenty-one days (actually thirty-four days) seems in this case, at least, to point to the probability that the state of nonspecific protein desensitization following an injection does not last longer than two or three weeks.

CASE III.—April 11, 1924, Dr. S. R. Shaner referred a case of asthma which he had had under treatment and observation for several years. The patient, a young lady, was thirty years of age, single, and a librarian. She had suffered from recurrent attacks of autumnal hay fever each season since her fourteenth year, and for the past three years attacks of acute bronchial asthma had also been present.

The family history of this patient revealed that her mother had been subject to nocturnal convulsions at irregular intervals from her eighteenth to her twenty-fifth year. About the time the convulsions stopped typical migraine seizures with vomiting developed, which persisted until the menopause.

The personal history of the patient showed that she was the youngest of four children; was a full term baby and had a normal birth. She was bottle fed and her mother reported that she had much digestive disturbance before teething. As a girl the patient remembered having had many socalled bilious attacks and frequently suffered from hives. At her twelfth year she began to have headaches and vomiting. Menstruation was established at thirteen years; always regular and with little systemic disturbance. Two months later, August, 1908, she presented her first hay fever symptoms and these recurred periodically each year since (sixteen years). Change of climate, rhinological treatments, pollen therapy, and the use of parathyroid and calcium gave only temporary relief.

In the summer of 1921 acute asthmatic paroxysms developed which recurred at several week intervals, mostly at night, for two years. During 1923, the asthmatic seizures became much more severe and were recurring both day and night, so that she rarely passed twenty-four hours without requiring adrenalin or morphine hypodermically to secure temporary relief. The physical signs were typical of an acute bronchial asthmatic paroxysm.

April 11, 1924, the hemoglobin was 78 per cent.; the red cells 3,950,000; the white cells 7200; the differential blood count showed a 9 per cent. of eosinophile cells. On April 12th, 14th, 15th and 16th, during which days one severe asthmatic paroxysm was followed by another, the differential blood counts revealed a 15, 11, 14 and 12 percentage of eosinophile cells respectively.

On April 16th, the patient was given a one six hundredth of a grain of crotalin solution intramuscularly. This was followed by a very mild local reaction and two days later the percentage of the eosinophiles was eleven. The asthmatic attacks continued. April 21st, a second dose of one six hundredth grain of crotalin was given in the other arm, this was followed by a marked local reaction, and two days later the eosinophile cells were 21 per cent. in the differential count. On April 25th there was 16 per cent., and on April 26th 11 per cent. of the eosinophiles present.

April 28th, with 9 per cent. of eosinophiles present, I gave a third one six hundredth grain injection of crotalin solution. This was followed by another marked local reaction. It was interesting to note that there had been an interval of eight days without any asthmatic seizures, when on April 29th, twenty-four hours after the third crotalin injection, the patient had two severe paroxysms. The eosinophiles on April 30th were 16 per cent., and on May 1st 13 per cent., and that night there was an asthmatic attack.

May 5th, with a 10 per cent. eosinophilia present, I gave a fourth injection of one six hundredth grain of crotalin. The local reaction following this injection was good, but not nearly so marked as the two preceding ones had been. Two days after this injection, May 7th, the eosinophiles were 15 per cent. There had been another interval of six days without any asthmatic attacks, when during the night of May 7th a severe paroxysm occurred.

May 9th, the percentage of the eosinophiles was 9 per cent., and May 12th, they were 8 per cent. That morning I gave a fifth injection of one six hundredth grain of crotalin. During the following night a severe and long asthmatic seizure occurred. Two days later the eosinophiles were 13 per cent.

From this date on until the patient went to the country for a vacation, August 4th, she received a weekly injection of crotalin. Following each injection there was a moderate increase in the percentage of the eosinophile cells but they never went higher than 12 per cent. and during the month of July there developed after injections only a 7 or 8 per cent. During the months of September, October and November the percentage of the eosinophile cells on the second day following a crotalin injection did not go higher than 5 or 6 per cent.

Clinically, it is of interest to record that since the hard paroxysm on the night of May 12th, this patient has been entirely free from all asthmatic symptoms (seven months). Moreover, no hay fever symptoms developed during the summer of 1924 (the first season she had missed for sixteen years).

Again, if my interpretation of the eosinophilic index in sensitization diseases is correct, this patient has remained nonspecifically desensitized for the past six months. During this period she has been entirely free from asthmatic manifestations and there has not been present in her differential blood counts at any time following the protein injections what could be termed an eosinophilia.

SUMMARY AND CONCLUSIONS

1. While protein therapy is still in a tentative stage of development, its clinical results are promising and we are now warranted in treating diseased conditions by this means when we desire to aid natural resistance and increase the defensive forces of the system.

2. Recording of clinical observations are of value in studying the relation of anaphylaxis to immunity.

3. Since an increase in the percentage of eosinophile cells is recognized as evidence of an anaphylacticlike state, their relative proportion in hypersensitization states and following nonspecific protein injections may be used as an index to determine the degree of desensitization and antianaphylaxis induced, as well as for the strength of dose and the frequency of administration.

The author's references will appear in his reprints.

Tryparsamide in Syphilis

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Tryparsamide is the name applied to an arsenic compound first prepared by Jacobs and Heidelberger (1) in 1917 in the Rockefeller Institute for Medical Research, used first in trypanosome infections and later in the treatment of late syphilis of the nervous system. It is the sodium salt of N-phenylglycineamide-p-arsonic acid, containing 25.32 per cent. of arsenic in the pentavalent form. Tryparsamide is a colorless, odorless powder, readily soluble in water.

EARLY EXPERIMENTAL WORK

The toxic action of tryparsamide was carefully studied by Brown and Pearce (2) in 1919 in various animals. They found that the substance could be given by almost any method of administration to these animals in large doses—a minimal lethal dose varying from 0.75 to 2.75 gm. to the kilogram of body weight for different species. The tolerance of different animal species varied widely, but with one exception, the reaction to toxic doses was of a favorable character. These workers found the toxic effects confined to doses relatively close to the minimal lethal dose, and recovery from sublethal intoxications was remarkably rapid and complete. It was further noted that repeated administration of very large doses at comparatively short intervals of time might be given without incurring dangers incident to cumulative action or to superposition of toxic effects. It was possible to develop a high degree of tolerance —well above that which was fatal for the normal animal.

Brown and Pearce (3) tested the therapeutic action of tryparsamide in a large series of mice, rats, and guineapigs, experimentally infected with various strains of trypanosomes. Very favorable results were produced with doses of from 0.2 to 0.3 gm. to the kilogram of body weight, which is much below the toxic dose. The absence of organic or functional disturbance following therapeutic doses was a significant point. In a second series (4), these workers found a marked curative action in experimentally infected rabbits, with the best advantage by repeated dose therapy.

The action upon spirochete infections (5) was not so striking, although a "very definite effect is produced upon the course of infection by Treponema pallidum. In the case of blood spirochetes, the infection is ameliorated, and even though the spirochetes are not immediately destroyed, the infection is frequently brought to a termination which leaves the animal in a condition not unlike that produced by more powerful spirocheticidal agents. It does possess a considerable degree of spirocheticidal action, but its chief effect is seen in the peculiar manner in which it modifies or controls the course of the infection." The lesions may be favorably influenced out of proportion to the action on the spirochetes.

In three classes of animal infections Pearce and Brown (6) found the trypanocidal action of tryparsamide was much less for Trypanosoma rhodesiense than for Trypanosoma gambiense. The outlook for the drug in the therapy of Rhodesian sleeping sickness was forecasted to be much less hopeful than in gambiense infections, though because of the tolerance exhibited to the drug and the possibility of employing an intensive system of treatment, it was hoped that some benefits might be derived from its use. Smillie (7) has more recently reported on the treatment of *mal de caderas,* a disease of horses in South America, caused by infection of Trypanosoma equinum with tryparsamide, and has obtained encouraging results.

TRYPARSAMINE IN HUMAN TRYPANOSOMIASIS

The use of the drug in human infection by Trypanosoma gambiense was studied by Pearce (8) in seventy-seven cases of both early and late stages, in the Belgian Congo in 1920. The general beneficial effect of the drug was a noticeable feature of its action in both early and advanced cases, as shown by the disappearance of subjective symptoms, by the return of the pulse and temperature to normal limits, by the pronounced improvement of the blood picture, and by well marked gains in weight. Doses of three to seven gm. administered intravenously were sufficient to sterilize the peripheral blood, although relapses were liable to occur unless treatment was continued. Intramuscular administration produced a longer immunity against relapses than did intravenous administrations. The only untoward effect in the seventy-seven cases treated was visual impairment, which was slight in six cases, moderate in seven cases, and marked in four cases. Recovery was complete in ten of these cases, some improvement in three others, and slight in the remaining four. All were advanced cases with marked alteration in the spinal fluid except two. There was no instance of sudden complete blindness, but the condition was one of visual dimness of various grades. In one patient, two doses of four grams at a week's interval was followed by visual disturbance, but in the others more than two doses were given. Pearce believes it is likely that the individual pathological condition of the optic structures in advanced cases is the predisposing factor in the occurrence of this untoward effect.

Since the first work by Pearce, Chesterman (9) has reported a study of the cerebrospinal fluid changes occurring in forty cases of sleeping sickness treated with tryparsamide, and agrees in his results with those of Pearce. Van den Branden and Van-Hoof (10) have reported on fifty-five patients in the Belgian Congo, whose treatment was started by Pearce. Doses of from two to eighty-two grams in one to four courses were given. In the early cases without central nervous system involvement, there were one hundred per cent. cures. In thirty-five advanced cases there were sixteen cures (forty-five per cent.), thirteen other patients were living and well and nearly normal spinal fluids, and three patients died. Morgan (11) is reporting a case treated at the Rockefeller Institute which had been treated

with Bayer 205, and relapsed, with symptoms of marked central nervous system involvement. Following tryparsamide treatment, the patient has returned to excellent health.

EXPERIMENTAL WORK WITH TRYPARSAMIDE

Besides the original work carried on by the workers mentioned above, there have been some published reports of experimental work on tryparsamide.

Two reports have been published regarding the penetration of the drug into the spinal fluid. The first was made by Voegtlin, Smith, Dyer, and Thompson (12) in rabbits. A heavy suspension of Trypanosoma equiperdum was injected into the cranial subarachnoid space of rabbits. No essential difference towards arsenicals has been discovered between Trypanosoma equiperdum, Trypanosoma gambiense, and Treponema pallida. Preliminary investigation demonstrated that trypanosomes thus injected could be recovered in considerable numbers. Tryparsamide and other arsenicals were then injected into the ear vein of the infected animals. After twenty-four hours a careful search was made in at least six different specimens of cerebrospinal fluid taken from various subarachnoid spaces of the brain and medulla. The absence of trypanosomes in these specimens was considered evidence of permeability of the meninges by the arsenical injected or of some trypanocidal derivative. Under these experimental conditions, tryparsamide proved more effective than any other of nine arsenicals used. An amount which was only four per cent. of the minimal lethal dose was eighty-seven per cent. efficient. Sulpharsphenamine with sixteen per cent. of its minimal lethal dose was eighty-two per cent. efficient, being the second most effective arsenical used. Mehrtens, Kolos, and Marshall (13) have found tryparsamide to be positively chemotrophic for nervous tissue as compared to arsphenamine. The spinal fluids of patients who had received previous injections of tryparsamide showed as much as two or three times as great arsenic concentration as those who had received intravenous arsphenamine injections. Spinal irritation increased the arsenic concentration from twenty-five to thirty per cent. over those cases in which only intravenous tryparsamide was used.

The arsenic content of the blood after intravenous injection has been studied by Fordyce, Rosen, and Meyers (14) in 304 blood samples taken after tryparsamide injection, at varying lengths of time. They found a rapid disappearance of the drug from the blood stream during the first fifteen minutes after the injection, the most abrupt fall occurring within five minutes. After twenty minutes and up to four hours, the quantity present in the circulating blood is nearly constant. At the end of fifteen minutes 7.65 per cent. of the arsenic is present in the blood stream, and at the end of seventy-two hours only 0.012 per cent. remains.

In line with the small amount remaining in the blood stream, it was pointed out by Young and Hamilton (15) that at least a part of the drug was excreted in the urine unchanged. A further study by Young and Muehlberger (16) on four cases, showed that in three of them eighty-eight to ninety-five per cent. of the drug was excreted within the first twenty-four hours.

TRYPARSAMIDE IN SYPHILIS

To date relatively few reports of the therapeutic use of tryparsamide in syphilis have been published, since while the drug has recently been approved by the Council on Pharmacy and Chemistry of the American Medical Association, for some time it was not offered for sale, pending the outcome of clinical study. It was stated (17) that the Rockefeller Institute was in entire control of the chemical and biological testing and distribution of the substance. A recent report from Pearce and Brown (18) states that now over sixty clinics and institutions in the United States are using the drug and ten in other parts of the world.

Brown and Pearce (19) summarized the important features of the action of tryparsamide as comparative freedom from untoward effects, a moderate degree of trypanocidal action and slight but definite spirocheticidal action, an unusually high penetrability which enables it to develop a high actual as compared with its potential parasiticidal action, and a remarkable power of reinforcing processes of natural resistance and of promoting recuperation. Therefore the use of the drug should be directed with a view to utilizing these resources and not from the viewpoint of a powerful parasiticidal agent.

The first clinical report made by Lorenz, Loevenhart, Bleckwenn, and Hodges (20) painted a glowing picture for the use of tryparsamide in neurosyphilis, especially generally paralysis. It was also recommended for patients who could not take other arsenicals, for patients who had been proved to be Wassermann fast; for late syphilis occurring in patients past middle age because of its less drastic effect than arsphenamine and neoarsphenamine, and for patients in a poor state of nutrition. They state that the introduction of this drug into the therapy of syphilis was not based primarily upon its spirocheticidal action, which was comparatively feeble, but on certain unusual features of toxicological and therapeutic action observed in experimental animals, such as the promptness of recovery from toxic injury, tolerance to repeated doses, a marked tonic effect, and the ability of the drug to induce resolution and healing of syphilitic lesions, even in the presence of actively motile spirochetes, without increasing the liability to the occurrence of a generalized disease.

Following their first report, Lorenz and Loevenhart along with Reitz and Eck (21) have published their conclusions based on the treatment of 185 cases of neurosyphilis over a two year period with tryparsamide. They state that tryparsamide with mercury salicylate is therapeutically effective in early paresis, meningovascular syphilis, and to a lesser extent in taboparesis, tabes, and in advanced paresis. The beneficial clinic results generally precede the improvement in the serology. Definite paretic psychosis disappears as the result of treatment, with the persistence of mental restoration over a two year period.

The second clinical study to be published was by Moore, Robinson, and Keidel (22). They used the drug in various types of syphilis. From their results in the treatment of eight early syphilitic cases, they concluded the drug to be contraindicated because of its comparatively feeble spirocheticidal activity. In twenty-four cases of late syphilis (tertiary and

latent) they found it inferior to arsphenamines, and if used should supplement mercury and arsphenamine and not supplant it. Other than central nervous system syphilis, it had no effect, and consequently these writers feel it should be restricted to neurosyphilis and possibly vascular syphilis. In forty cases of neurosyphilis, twenty-eight cases were arrested, five improved, and seven unimproved from a clinical standpoint, and with the majority showing improvement in the spinal fluid findings. In a later report (23) these workers give their conclusions based upon the treatment of 133 cases of neurosyphilis. They state that in primary and secondary syphilis, or in tertiary syphilis without nervous system involvement, the therapeutic involvement is so slight as to preclude its further general use in these types of infection. In neurosyphilis, on the contrary, tryparsamide therapy produces favorable clinical and serological results, which I believe cannot be equalled by other forms of treatment.

The changes in the spinal fluid following tryparsamide treatment have been noted by most writers, and especially by the report of Solomon and Viets (24), who treated about one hundred cases of neurosyphilis with the drug. In nearly every case the cell count was reduced to normal after six or eight injections; the globulin was reduced to a relatively small extent; the Wassermann reaction in the spinal fluid was not greatly affected in the majority of cases, and the colloidal gold curve was apparently less affected than any of the other spinal tests. Clinical improvement occurred in some cases, but was no more satisfactory than with older methods of treatment. They believe that the best results may be obtained by the use of tryparsamide with other antisyphilitic methods. In contrast to the serological changes without much clinical change, is the report of Wile and Wieder (25) who found in the treatment of fifty neurosyphilitic cases (twenty-one general paretics) the clinical improvement was striking, although not paralleled by striking corresponding changes for the better in the spinal fluid. Kennedy and Davis (26) also note the more striking clinical results but call attention to the fact that while the serological results are at first glance disappointing, tryparsamide therapy appears to influence most of the tests that have the greater clinical significance (cell count and colloidal gold test). They feel that in all clinical types of neurosyphilis and particularly general paralysis the therapeutic results obtained with tryparsamide compare favorably with the best results obtained for other forms of treatment. Ebaugh and Dickson (27) also state that tryparsamide gives frequently good clinical results although the serological changes are meagre and transitory. Their results, based on the treatment of fifty-two cases of general paralysis, is much more encouraging than any previous method of treatment.

Other clinical studies on tryparsamide therapy have been made, both in this country (Viner (28), Hindman (29), Blair (30)) and abroad (Sicard (31), Cheinisse (32), Guillain and Girot (33), Claude and Targowla (34)). Both the latter references cited do not regard tryparsamide therapy as of any advantage over other forms. Guillain and Girot base their conclusions on the treatment of five cases, three of which were general paralysis. Claude and Targowla term tryparsamide therapy as inoffensive, and in a limited test found no clinical or serologic improvement in definite cases of general paralysis.

ACTION OF TRYPARSAMIDE ON THE OPTIC TRACT

Pearce first noted the visual effects as the result of tryparsamide therapy on the cases treated in the Belgian Congo. It has been mentioned in most of the clinical studies made, and some experimental work has been done on the subject. Special clinical studies have been made by Woods and Moore (35) and by Lillie (36). The various reports place the optic nerve involvement between three to forty per cent., the majority of which are temporary, three to five per cent. being permanent. In the cases showing visual disturbances, if a rest is given in the treatment, eye symptoms do not recur with further tryparsamide therapy. Woods and Moore feel that preexisting syphilitic disease of the optic nerve or retina is not necessarily a contraindication to the use of the drug, and Lillie states that it is not contraindicated by pathological changes in the fundus. The latter writer found in his select series of cases that tryparsamide was not more harmful to the eyes than any form of arsenic used in the treatment of syphilis of the central nervous system.

SUMMARY

1. Tryparsamide is an arsenical compound, containing 25.32 per cent. arsenic in the pentavalent form.

2. Experimental and clinical studies have shown it to be an effective therapeutic agent in cases of trypanosomiasis.

3. Its use in the treatment of syphilis is based more upon its power to penetrate nervous tissue, rather than its spirocheticidal power.

4. From clinical studies, it is found advantageous in the treatment of neurosyphilis, particularly general paralysis, but is ineffective in primary and secondary syphilis, and in tertiary syphilis in which there is no involvement of the central nervous system.

5. The method of treatment usually advised is in either two or three gram doses, dissolved in ten c. c. of sterile water, given intravenously, once a week, for a course of eight to twelve doses. A rest period of one to three months is given between courses. One or more courses may be given.

6. The only serious disadvantage is encountered in visual disturbances, which occur relatively infrequently, and need not cause permanent damage if careful attention is given to the dose of the drug.

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Cases in Which the Test for Pancreatic Efficiency Has Been of Clinical Assistance

Clinical Report No. 1

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New York

(*Concluded from page 278*)

Case VI.—Mrs. A. M. C. The patient was referred by Dr. Adams, of Whitestone, Long Island, September 12, 1924; widow, aged sixty-two, no children. Family and personal histories were negative. The present illness began about February, 1923, when foods commenced to cause distress; this gradually grew worse, when a pain developed in the upper right abdomen. The patient at first thought she might have strained her side, because the pain came on quickly; she said she thought she had a fever for a few days. The soreness of the right side continuing and the gastric distress becoming worse, Dr. Adams considered the possibility of gallstones. An x ray examination was made in June, which was negative as to proving the presence of gallstones. The patient had had a nocturia two to three for years, but many examinations of the urine did not prove anything.

Physical examination showed a well nourished and proportioned woman, blood pressure 140/90. The examination was negative with the exception of a marked stiffening of both lobes of the liver and a distinct tenderness on pressure in the median fissure. The laboratory examinations showed negative urine, normal renal efficiency test, and the following bile and pancreatic tests: September 15th, A fraction 20 c. c., light yellow, cloudy, mucus xx, pus xx, and Bassler test twelve units; B fraction, 70 c. c., dark brown, cloudy, mucus xx, pus xx; C fraction 60 c. c., light yellow, cloudy, mucus xx, pus xx. The diagnosis was chronic cholecystitis, perhaps with stones, and secondary fibrosis of the liver. Operation was refused.

Progress: The Bassler test on October 2d showed ten units; on October 9th, eight units; October 16th, eight units; October 27th, six units; October 31st, four units. All this time the patient complained of feeling no better, while the cytology of the bile fractions remained as first reported. Operation was again urged, although it was felt that so much serious damage had occurred in the liver that the improvement here would not make it worth while. However, the pancreas was diminishing in function, and to save this organ the need for surgery was emphasized. The suggestion was not accepted, however, and treatment was continued, the diet being further modified, the pills kept up, and aspirations made twice weekly through November and December. In about mid November the patient said she felt much better, although there was only slight improvement in the bile fractions but a gradual rise up to eight units in the pancreatic efficiency, at which point it then remained.

Comment: This case proves that cholecystitis may not improve under bile aspirations and that when secondary liver pathology is present it is wiser to

insist upon operation since it is the more important when there is a decline of pancreatic efficiency. We feel that with the improvement claimed by the patient the lowering of the unit reading is significant. It is probable that under continued treatment she may be held steady but our experience has been that when one can prove a permanently low or especially a lowering of the unit findings operation should be urged with firmness to save the pancreas from chronic pancreatitis.

The next case reported is a complicated type of case of chronic colecystitis, pancreatic deficiency, chronic interstitial appendicitis, and colonic stasis in which the pancreatic efficiency test was of value in a negative way for diagnosis.

Case VII.—Mrs. A. M. The patient was referred by Dr. P. Goldfader, Brooklyn, on January 5, 1924, widow, no children, housewife, aged forty-four. The patient's father and mother were living and well. The personal history was negative in significant ways. The present illness began about five years before, with gradually increasing belching of gas. At times there were attacks of pain in the epigastrium and occasionally some vomiting. About one year ago there had been an attack of abdominal pain which required morphine, and another attack occurred four weeks ago. The gastric distress from gas distention at the early stage was sometimes so severe that the patient could not stretch out in bed on her back, but would be obliged to get up and walk about or take some medication to relieve the distention and distress. She was seen by several physicians, and a summary of things done and diagnoses made was as follows: negative urine, negative Wassermann, negative blood culture, negative blood count, poor filling of the pylorus, poor filling of both outlines of cap, poor gastric peristaltic power, defect on lesser curvature of cap (made on the second x ray examination but not confirmed by the first), six hour barium meal in the large intestine with suggestion of loop of small intestine involved in splenic flexure of colon, appendix well filled and stagnant at seventy-two hours. The second set of films was interpreted by us as negative in all ways except for a globular and stagnant appendix.

Physical examination showed blood pressure 110/87, marked tenderness on pressure over the gallbladder, slight over the appendix. The skin was dry and the patient said there was much itching. The left lobe of the liver was stiffened. Laboratory examinations disclosed negative stool, urine, and test meal, a bile aspiration that was essentially normal in all fractions, and a Bassler test reading of fifteen units. The treatment was conservative for a while, but the removal of the appendix and gallbladder was recommended if warranted. On a bromide and valerian mixture to control the belching, a hypocholesterin diet, Carlsbad salts, and much walking, the patient made a steady improvement and on July 8th said she felt perfectly well, the appendix still being retained.

Comment: It is probable here that a return of symptoms will occur, although if the patient is continued more or less on a diet, with Carlsbad salts and daily walks, they will be held in abeyance. The excessive belching was certainly due to the nervous condition as much as to the pathological condition of the gallbladder, which because of the negative Bassler test could not be affected very much, a suggestion that came from the bile aspiration as well, although from a diagnostic viewpoint we do not attach much importance to this. In many of our cases we have negative findings with positive pathology, and in others positive biles with negative pathology. We feel it answers in a diagnostic way in a percentage sense in a large group of gallbladder patients but in the individual case judging from operations, slides of tissue and a study of infections, it can only be considered as of minor value. What is interesting in this connection is that in our experience the most commonly found type of gallbladder with stones often gives a nonconclusive and even negative result in the Lyon-Meltzer test in so far as pus, mucus, mucopurulent clumps, bacteria and even crystals are concerned. After most conscientious effort we candidly admit our failure frequently to be able to judge the different cells as to where they come from and their significance in accurate enough ways for clinical deductions.

In our experience also, when an infection exists without stones the Lyon-Meltzer test is more likely to be of help in a clinical way. We still hold to our contention that the method drains the biliary apparatus—the ducts and biliary radicals completely and the gallbladder only in small part and only according to the energy of drainage of the ducts in which the flow of the main current through them causes a vacuum or an attraction flow by effect on the opening of the cystic duct by the bile running past. We still do not believe that in the vast majority of instances in which dark B fractions are obtained that this is other than resident and condensed bile from the main ducts and largest biliary channels in the liver and not from the gallbladder *per se,* and we still have to be convinced that "crossed innervation" or vermicular action of the gallbladder enters into any significant part of obtaining it even when magnesium sulphate solution is employed as the stimulant.

We offer for consideration that just because Meltzer showed that the physiological action of magnesium sulphate solution is relaxing to the unstriped muscle fibres is no reason to deduct in the method that the Odii sphincter is relaxed by it and a "crossed innervation" need be hypothesized because characteristic B fractions are obtained. Many other substances than magnesium sulphate will give the characteristic B fraction (peptone solution, dilute HCl, etc.) It is our opinion that the presence of a stimulant to the duodenal mucosa initiates and continues the flow either reflexly or through secretion energizing the biliary channels in the liver to discharge their contents. However, here we feel that the severe symptoms were due to the chronic appendicitis which the high unit reading of the Bassler test tends to prove by eliminating the gallbladder as a cause. We think it is too soon to decree that the Bassler test is infallible although in our experience it has been remarkably steady and dependable for a laboratory procedure and as a standard to judge accurately the effect on the pancreas from existing gallbladder pathology.

Crohn and others have suggested that even with chronic pancreatitis the enzyme function may be normal. Experience with depancreatized dogs has

proven that the merest shred of pancreatic tissue left *in situ* will function surprisingly well, keeping the animal in digestive balance. From far too limited observation thus far obtainable to be sure about it, a few cases have given us the suggestion that abnormal conditions of the head of the gland give deficiency findings while those of the body or tail alone are not liable to. A recent article by Piersol and Bockus (3) on this subject suggests that in a group of cases of gallbladder disease eighty-five per cent. showed a reduction of over fifty per cent. in enzyme activity, which we feel is far too high an association and due entirely to the method of testing the duodenal return employed. Our observations on this point comprise too few proved operative cases to report at this time. But up to the present it seems logical for us to state that somewhere between twenty and forty per cent. is more accurate as to clinical fact and this corresponds more closely to the figures of Judd (4) and other surgeons as to the incidence of associated pancreatitis or stiffening of the head of the pancreas met with at operation in which gallbladder pathology was proved.

The following is a case of chronic cholecystitis with reflex hypopancreorrhea, negative bile aspiration, reason for operation.

Case VIII.—Mrs. C. V. M. The patient was referred by Dr. S. W. Wells, Liberty, New York, October 27, 1924; married, no children, aged thirty-one. The family history was negative. The personal history was negative except for an appendectomy ten years before, for acute appendicitis, and pneumonia six years before. Present illness: At the time of the operation on the appendix the patient was seized with an acute pain in the right abdomen which was diagnosed as due to gallstones. At operation the gallbladder was found normal, but the appendix was found acutely inflamed and removed. Off and on since that time the patient had some slight distress on this side which was not of importance until four months ago, when it became troublesome. Operation was again advised on the diagnosis of acute inflammation of the gallbladder. At times in the past years the patient had had sugar in her urine and excess sugar in the blood, both of which were easily controlled by diet, so that at the present time it was deemed of little significance and no special diet was being followed.

The physical examination was negative except for a slight degree of anemia which was confirmed in the laboratory. There was also considerable debility. X ray examination was negative with the exception of a visible gallbladder, the suggestion of postpyloric adhesions, and a distinct tenderness over the gallbladder. The urine was negative and the bile aspiration also, except that there was but six units pancreatic efficiency by the Bassler test. For treatment, cholecystectomy was advised, followed by pancreatic feedings of pickled whole gland.

Progress: An operation was performed on November 5, 1924, by Dr. J. B. Hulett of Middletown, New York. The gallbladder appeared normal but twisted on itself and bound down by many adhesions. The organ was removed. Recovery was rapid and the symptoms disappeared. A pancreatic efficiency test done February 27th showed eighteen units, demonstrating resumption of pancreatic function.

Comment: Here is a case of chronic cholecystitis with a negative diagnostic bile aspiration but in which there was depressive dysfunction of the pancreas, reflex from the gallbladder. In this case no pathology would be found in the pancreas largely because no marked or at least no demonstrable infection of the bile tract existed. Recall that the gastric factors of infective bile tract or gallbladder disease are missing in the history. A reflex depressive function on the pancreas from the gallbladder where there is enough suggestion from physical and x ray examination always suggests the performance of a cholecystectomy.

In the next case cholecystectomy for stones was performed. The symptoms continued due to enterocolonic stasis, redundant sigmoid, ptosis and intestinal toxemia. By virture of the test the pancreas was judged as normal and thus no resident pathology from the pathology of the gallbladder.

Case IX.—Mrs. D. P. The patient was referred by Dr. A. Sturmdorf, New York; she was a housewife, aged thirty-five, with one child. Her father and mother were living. She had had a gynecological operation five years ago, and the gallbladder was removed one year ago on account of severe attacks of biliary colic requiring morphine injections. She had had more or less indigestion since the removal of the gallbladder, but more attacks of pain. This apparently was not in any way due to the operation on the gallbladder, because some symptoms existed before and were masked and made light of with the more prominent attacks of biliary colic. About ten days or two weeks before menstruating, the patient felt vague pains through the body, cardiac palpitation, exhaustion, and the indigestion was worse. However, there was more or less indigestion all of the time, and she was habitually constipated.

Physical examination showed a contracted chest, of the atonic type; the abdomen very poorly developed; the stomach and cecum splashy; the stomach distinctly low on standing; the Sargent white line positive; metabolic rate plus eight, and blood pressure 100/80. The x ray examination disclosed a moderate grade of ptosis with good motility, marked ideal statis, redundant sigmoid, general tenderness in epigastrium. The urine was negative except for excess indican and a 10.3 sulphate partition. The stool examination showed a high coli content, alkaline reaction, and the typical laboratory picture of an intestinal putrefaction. The bile fractions on June 25, 1924, were: A, 70 c.c., light yellow, clear, mucus x, pus x; B, 120 c.c., dark amber, mucus xx, pus xxx, many clumps of bilirubin, some cholesterin crystals; C, 30 c.c., yellow, clear, mucus x, pus x. The Bassler test reading was fifteen units. Treatment was for the conditions mentioned, consisting of constructive and anti-constipating diet, a belt, reconstructive exercises, ovarian substance, and the correction of social and domestic troubles. The result was most satisfactory.

Comment: Here is a case that gave a positive B fraction in the bile aspiration as to pathology although the gallbladder had been removed. The positive nature of the B fraction was paid no attention to in the presence of a normal unit reading. The case illustrates that even in the presence of an adynamic type of body and vitality and a toxic intes-

tine the pancreas functions normally. It is presented to show a point we think important, namely, that an infectious gallbladder pathology may by congestion of the head or actual disease of the pancreas cause a hypopancreorrhea and, in this instance, unless the disorder in the pancreas has become too far organic, operation is always justified because a good many symptoms which heretofore have been considered due to indigestion from the gallbladder are really the result of low pancreatic function which in the congestive cases is restored to normal by cholecystectomy. It is also true that there may be no hardening of the head of the pancreas possible of being felt when marked infective pathology of the gall tract exists, especially of the gallbladder. In this instance the pancreas is not affected, and if the gallbladder had not been removed it would have been a matter of judgment when the unit reading is normal as to whether an operation should be performed or the condition treated by medical means. It is apparent in this case that the patient had other causes for abdominal distress and that these were the more important, but helping in judging this was the normal pancreatic test.

The following case is carcinoma of the gallbladder and pancreas in which the bile aspiration showed the presence of bile while a marked jaundice existed but the pancreatic test was positive.

Case X.—Mr. I. J. The patient was seen on June 27, 1924. He was a retired business man, aged fifty-six, married, six children. His family history showed that his father and mother were dead, causes unknown; several brothers and sisters were living and considered well. The personal history was negative. Without having any previous illness or indigestion the present illness began with jaundice about nine months ago. The urine then became dark and the stools light. Slowly there developed a feeling of weight and pressure in the upper right abdomen. He had lost twenty pounds in weight during the last nine months, and during the past few weeks the feet became swollen. Physical examination showed the patient markedly jaundiced, somewhat emaciated, with a hard irregular mass in the upper center of the abdomen, mostly springing from the upper left side. There was a slight edema of the ankles. The laboratory reported the urine markedly bile stained, and the stool acholic. Careful examination of the stool showed a very moderate steatorrhea. Bile aspiration gave A, B, and C fractions in amounts of 20, 15, and 12 c.c., respectively. Each was bile stained although all of them were but faintly so compared to routine returns. In the Bassler test there were no pancreatic units. On July 2, 1924 the abdomen was opened and an extensive carcinoma involving the whole head of the pancreas and the gallbladder was discovered. The patient died November 3, 1924, from advanced carcinoma.

Comment: Here is a case which suggests a point that any involvement of the head of the pancreas (which in bulk is about one half or two thirds of the organ), whether from syphilis, tuberculosis, malignant disease or chronic pancreatitis generally, gives negative or very low pancreatic readings in the test. It shows that bile may occasionally be aspirated from the duodenum in marked chronic jaundice and yet the pancreatic efficiency test be positive as to involvement of the pancreas.

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Office Gynecology*

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This subject is so broad that I shall touch only a few of the high spots and lay emphasis on some of the more common and practical aspects.

Excluding neoplasms and venereal infections, the major part of gynecology is the result of poor obstetrical work. Among these causes are manual dilatation of the cervix, the abuse of pituitrin, artificial rupture of the membranes before dilatation is complete, instruction to the patient to bear down before dilatation is complete, the premature and improper use of forceps, improper repair of lacerations of the pelvic floor, suturing the skin and not the muscular structures, and improper asepsis with its chain of sequelæ.

The history of the gynecological patient is extremely important. Emphasis should be laid on the menstrual history. A late onset, for example, may lead us to suspect infantilism. The date of the last period and of the one before that should always be taken. The obstetrical history should be taken in detail. A long period of time in bed postpartum will suggest a puerperal infection. The incidence of miscarriages should be noted and also whether curettage was performed and if infection occurred. The triad of gynecological symptoms, pain, discharge and menstrual disturbances, should be inquired into in detail.

A complete physical examination should be made. In the vaginal and rectal examination the finger should be covered with a glove or finger cot. The cervix and vagina should he inspected through a speculum. No gynecological examination is complete unless a rectal examination is done.

I should like to emphasize that the diagnosis of a pathological condition found by this physical examination is not enough to make a decision regarding therapy.

When a lesion like carcinoma or ovarian cystade-

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noma is discovered the course to pursue is simple, regardless of the presence or absence of symptoms. The examiner may discover fibroids, pyosalpinx or other conditions not endangering life but endangering the future health of the patient and therapy must be instituted. However, in the course of his pelvic examination the examiner may find minor divergences from the normal which frequently have no relation to the pain, or other symptoms complained of. Successful treatment in gynecology will depend not only on the correct diagnosis of a pathological condition of the pelvis but also on a proper study of the patient from all angles. For example, a woman complaining of backache and weakness may have a lacerated pelvic floor and a lacerated cervix but the symptoms may be due to her having had several children in rapid succession. She may do an excessive amount of washing and be very tired. To correct this woman's pelvic pathological condition and not her social pathological condition should be considered a mistake in gynecological judgment.

While we are definitely certain of the value of ovarian and thyroid therapy in the climacteric and in hypothyroid conditions, therapy with the other gland must as yet be considered in the experimental stage. The results assumed are far from proved and glandular therapy will often cause disappointment. We may say that the ovary and thyroid are counterbalanced by the adrenals and pituitary; that thyroid is to be given to the fat, sluggish woman; that ovarian substance or ovarian residue is to be used in amenorrhea and during the menopause; that pituitary and mammary glands are of value in the bleeding from subinvolution and in the moderate idiopathic bleeding in young girls; that corpus luteum is of some value in hyperemesis gravidarum, vicarious menstruation, and habitual abortion; that pituitary may be used in dystrophia adiposogenitalis, and that placental extract has been used for hyperemesis gravidarum, with, however, varying results.

GONORRHEA

The gonococcus causes a large portion of pelvic pathological conditions, spreading by direct extension along the cervix, uterus, tubes and peritoneum, causing also a urethritis but fortunately rarely a cystitis. A few facts regarding therapy may be emphasized. In the acute stage, rest in bed, a bland diet, tincture of hyoscyamus or balsam of copaiba internally, opium suppositories when necessary, and intraurethral injections of one or two per cent. protargol solutions may be used, care being taken not to enter the bladder. Warm sitz baths are useful. After subsidence of the acute stage the chronic urethritis should be treated with five per cent. silver nitrate solution directly applied through a Kelly endoscope, and vaginal douches of potassium permanganate solution may be advised, the douche being given under low pressure. While the cervix has been treated with silver nitrate, tincture of iodine, methylene blue, mercurochrome, and other drugs, I have found the most effective weapon to be the electric cautery applied in linear cauterization. It is important to treat Skene's and Bartholin's gland. A five or ten per cent. solution of silver nitrate may be injected through a hypodermic syringe, but here also the electric cautery will give greater assurance of eradication of infection.

In regard to adnexal involvement in the acute stage, the patient should be kept in bed with an ice bag to the lower abdomen, and the head of the bed should be raised. Plenty of fluids should be given to the patient and enough opiates to relieve the pain. Foreign protein therapy, such as the injection of milk, has been recommended, but I have had no experience with it. Intravenous medication and vaccines have been found useless. In the subacute stage, prolonged applications of heat, hot douches, hot sitz baths and dry heat externally will be of great help. During menstruation, the patient should be kept in bed and all treatment suspended. Conservatism is the watchword in adnexal gonorrhea, the longer operation is postponed, the less will have to be sacrificed. It is remarkable how the most involved pelvic pathological condition will clear up under conservative treatment. However, after months have passed, particularly in a woman whose earning capacity must be restored, if pain persists operation must be performed. The patient should be pronounced cured only if several smears from the cervix and from Skene's and Bartholin's glands are negative to gonococci and remain negative after menstruation, after a hot bath and after coitus with a condom. In the vulvovaginitis of young children, the vulva should be bathed frequently and a twenty per cent. argyrol solution introduced into the vagina, or through a triumph syringe with a small rubber tube attached, a one per cent. silver nitrate or mercurochrome ointment should be injected. The curette has no place in the treatment of gonorrhea.

LEUCORRHEA

Leucorrhea is the ever present complaint of the gynecological patient. It may be due to tumors, foreign bodies in the vagina introduced for the prevention of conception, or for masturbation, or forgotten pessaries, and is often the first sign of malignancy. In the majority of cases, however, it is the result of an inflammatory lesion of the racemose nabothian cervical glands. Bacteria, acting on a cervix recently lacerated during delivery or miscarriage, or on a cervix the seat of congestion from displacement or coitus interruptus, will cause this endocervicitis. In this condition the cervix alone is the cause of the leucorrhea and the inside of the uterus is not to be entered. Tampons are useless here no matter with what medicament they are impregnated. The cervix may be treated with silver nitrate, tincture of iodine, various powders, or other medication, but the best results will be obtained by the use of the electric cautery, linear incisions being made in the anterior and posterior lips. Douches should be used for cleansing purposes. The curette has no place in the treatment of leucorrhea. In the unmarried, congestion from constipation, displacement of the uterus, masturbation or from general debilitating conditions is the usual cause. Daily bathing is necessary, followed by a sterile douche through a soft rubber catheter and the instillation of a powder such as kaolin. Attention should be paid to the general health of the girl, outdoor exercises advised, and the syrup of the iodide of iron may be given internally.

BACKACHE

Another never ending complaint of the gynecological patient is backache. What is a simpler conclu-

sion in a patient who has the combination of backache with a retroverted uterus than that the retroversion is causing the backache? And in how many cases do we see women with uterine suspension who have had no relief! Exclusive of a pelvic pathological condition, backache may be due to sacroiliac subluxation, flat feet, faulty attitude, spinal curvature, spinal cord disease, and other causes. The normal mobility of the sacroiliac joints is increased during pregnancy and it is then and after delivery that sacroiliac pain is most likely to occur. Firm strapping with strips of adhesive plaster two and a half to three inches in width from the anterior superior spine of one side around the back to the other side and from the femoral trochanter around to the opposite one will keep the joints firm and relieve the pain. Then a properly fitting sacroiliac belt should be worn. Flat feet should not be overlooked. A coccygodynia will be met with occasionally, particularly after traumatism from prolonged labor or forceps delivery, or after falls or kicks. This can often be relieved by hot sitz baths and counterirritation. Rarely will excision of the coccyx be necessary.

The chief pelvic causes of backache are retroverted and retroflexed uteri and uterosacral cellulitis. Before operating to relieve a backache believed to be due to a retroverted uterus, the uterus should first be replaced manually and held in anteversion by a suitable pessary. The uterine sound has no place in the diagnosis of retroversion and should never be used to lift the uterus back into normal position. If the backache is relieved by the pessary we are justified in our conclusion as to cause and effect and may permanently cure the patient by a suspension operation, at the same time repairing any lacerations that may exist. Endocervicitis will cause extension of inflammation along the uterosacral ligaments and cause backache. In this case vaginal examination will reveal two tense and tender bands extending posteriorly from the cervix. The endocervicitis should be treated, preferably with the electric cautery, and heat in the form of hot sitz baths and hot douches will relieve the cellulitis.

UTERINE DISPLACEMENTS

The question of displacements of the uterus is most interesting when considered from the point of view of a prognostic diagnosis. The diagnosis should rightly include not only an anatomical and pathological diagnosis but also a prognostic diagnosis. Are the patient's symptoms due to the displacement and will she be well after the displacement is corrected? This is especially important if an operation is contemplated. A thorough physical examination should be made and the history should delve into the patient's mode of living where we can often make corrections that will bring about a symptomatic cure. It may be in place to remark that patients after operation should be instructed as to how to live, for only two often do we see women with beautifully repaired pelvic floors and cervices and uteri suspended in perfect position who a month or two after operation living and working as before will have a recurrence of all their symptoms. It is the physician in general practice who sees the woman in her normal habitat for a long period of time who can best make this prognostic diagnosis.

Office therapy of displacements of the uterus has a definite and useful field. In the retroversion in young girls resulting in menstrual disturbances, pelvic congestion, leucorrhea and pain, outdoor sports and exercise, the knee chest position, the kangaroo walk, attention to the bowels and instruction to empty the bladder at frequent intervals will often result in a cure. In the woman, especially postpartum, the large, subinvoluted retroverted uterus is often seen. Routine use of the knee chest position or the kangaroo walk postpartum will prevent a large proportion of these cases. When the uterus can be reposited by bimanual manipulation a properly fitting Smith or Hodge pessary should be inserted to keep it in position. This will relieve the congestion and subinvolution, the uterus will become smaller and after a few months the condition will be permanently cured. These patients should be instructed to take a daily cleansing douche and should be seen in the office once a month when the pessary should be removed and the vagina inspected for areas of ulceration. If there are any they should be treated and when healed a properly fitting pessary reintroduced. If there are no points of irritation the original pessary should be reinserted. A properly fitting pessary should cause no discomfort and should not interfere with coitus.

In the true adherent retroversion, operation is the only means of cure.

A prolapse of the uterus once established can be cured only by surgical treatment, but this condition frequently occurs in old women who are poor operative risks for various reasons and we are forced to do whatever is possible with pessaries. If reposition is difficult, the patient should be kept in bed and hot applications used until the prolapse can be reduced. A hard rubber pessary should be inserted, the biconcave discs, the Menge pessary which has the projecting bar lying in the vagina to prevent displacement of the pessary, or a combination of the ball and cup pessary being used. When the condition is so bad that a pessary cannot be retained some sort of abdominal binder with a pessary held in place by straps like the Mackintosh contrivance must be used. The soft rubber pessary should never be used as it is a pusformer. These pessaries should also be removed every month and the vagina inspected for areas of ulceration before reintroduction. The patient should be instructed to bathe and douche daily.

DYSMENORRHEA

Dysmenorrhea is at times difficult to handle. We should determine whether the pain is premenstrual or comenstrual, steady or colicky. This will occasionally result from evident pathological factors such as fibromata, retroflexion, or other conditions. In ovarian conditions it is an increase of a steady pain the result of a thickened tunica albuginea through which the matured Graafian follicle has difficulty in bursting. Sometimes this type is seen only every other month. Sometimes there is an ovarian toxemia with resulting change in what some authors are pleased to call the endometrial ferment as a result of which the blood clots, expulsion of the clots causing pain. The spastic type of dysmenorrhea is that in which the normal painless uterine contractions become so strong that pain results. In the congestive type pelvic inflammation or congestion from con-

stipation, coitus interruptus or masturbation may be the offender. The obstructive type is rare but occasionally where there is a sharp anteflexion, thorough dilatation followed by the introduction of a glass stem pessary to be retained during four menstrual periods will bring relief. This procedure is, however, by no means a panacea for dysmenorrhea, as it is indicated only rarely and even then recurrences occur. All evident pelvic pathological conditions should be corrected but it is in the case where no pathological conditions can be demonstrated that the difficulty arises. Especially in young girls, outdoor sports, abdominal exercises and attention to the bowels are important. In the spastic type belladonna or benzyl benzoate will often give relief, especially when the drug is given for a week before menstruation, increasing the dose at the onset. Aspirin, pyramidon with caffeine, may help. All sorts of combinations of the endocrines have been suggested but ovarian or corpus luteum in combination with thyroid in the obese are of value.

Nasal therapy should be mentioned for a rare case is seen particularly among nervous young girls who have colicky pain after the onset of the flow with headaches, vomiting and dizziness which is relieved by the application of a solution of two parts of ten per cent. cocaine and one part of one to one thousand adrenalin to the lower turbinates and nasal septum by applicator or spray.

STERILITY

The subject of sterility is worthy of a few remarks. It is essential that the male partner be examined in every case. The first procedure to be done in every case is the Huhner test. The patient should come to the office soon after coitus and a few drops of semen aspirated from the region of the cervix should be examined under the microscope. In healthy individuals dozens of active spermatozoa are seen in one low power field. Sometimes spermatozoa are seen entangled in mucus or killed by an acid vaginal discharge in which case simple alkaline douches may effect a cure.

It is also important especially in old healed gonorrheal cases to determine the patency of the Fallopian tubes. Instead of the original Rubin method the following modification may be used. A Keyes-Ulzman metal catheter is passed through a rubber urethral tip and is attached at the other end to a piece of rubber tubing, the urethral tip being one and a half to two inches from the tip of the catheter to plug the cervical canal. The rubber tube is then attached to a three way glass tube, the other two ends of which are connected by rubber tubing to a mercury manometer and to a large Luer syringe. The entire outfit, except of course the manometer, is sterilized by boiling. Through a bivalve speculum the cervix is drawn down by a tenaculum, cleansed and painted with tincture of iodine. By a sound the length and direction of the uterine canal are determined and the metal catheter inserted, the rubber urethral tip plugging the cervix. Atmospheric air is drawn into the Luer syringe and slowly injected into the uterus. Air will pass through the tubes under a pressure of 40 to 100 mm. mercury. If the pressure rises to 150 and remains there the tubes are closed. When air does pass through shoulder pains will occur in a few minutes. If desired an x ray will show the presence of air in the peritoneal cavity. This procedure, while important, is not without its dangers and should never be used in the presence of acute or subacute infection. Cases will occasionally be seen of acute exacerbation of chronic pelvic inflammation caused by the Rubin test.

It is in the case where the spermatozoa are active and the tubes are open, where we can find no pathological condition and sterility still persists that we have our difficulties. Sometimes we find fat, flabby women of definite hypothyroid type that calls for thyroid therapy. All sorts of combinations of endocrines have been advised, the combination of ovarian or corpus luteum with thyroid being the favorite. When, however, we see as I did a short time ago a woman of forty having her first baby in the fifteenth year of married life, having never used any contraceptive measures and having never had any treatment, it behooves us to restrain our enthusiasm when we see an occasional pregnancy follow our favorite treatment. The curette has no place in the treatment of sterility, and neither has dilatation of the cervix. Any cervical canal large enough to permit the passage of menstrual blood is large enough to permit the passage of spermatozoa. In general, operations for sterility *per se* are inadvisable.

CONCLUSION

In this brief talk, I have omitted many subjects and emphasized only a few. In closing, permit me to add my admonition to what you have doubtless heard many times. With the men in general practice lies the responsibility of making an early diagnosis of cancer of the uterus and so reduce the tremendous yearly toll of this disease. Whether the treatment be surgical or by radium and the röntgen ray, the early diagnosis is the vital factor. The malignant change may go on for some time without the patient being aware that anything is wrong. There is at first a slight serous transudation, often unnoticed, followed by what is really the first danger signal, a tinge of blood after coitus, a constipated stool or after a douche. Examination will disclose a mass springing from the cervix only in the squamous type, while the adenocarcinoma arising within the cervical canal and the carcinoma of the body of the uterus may give no signs. Here the curette has its distinct field and a diagnostic curettage of the entire interior of the uterus followed by a microscopic examination of the scrapings will give the diagnosis.

We must remember that the change of life is gradual and not ushered in by hemorrhages, and that menstruation does not return after the climacteric has been established, and that bleeding after the menopause almost always spells cancer. Another warning regarding the age incidence is in place. While cancer usually occurs in the fourth and fifth decades, the most active carcinomata I have yet seen occurred in two unmarried girls under twenty years of age.

There are, however, many cases of menorrhagia, not metrorrhagia, in women of menopause age, where the bleeding due to a benign fibrosis uteri. Medication, endocrine therapy, and douches will usually be of no avail and here radium, 1200 milligram hours, will result in an almost certain cure. But a diagnostic curettage should always be done before the radium is inserted, the possibility of malignancy being always uppermost in our minds.

Stasis the Destroyer

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Immunity from disease depends on the strength of the defences.

While acute disease is not altogether preventable, chronic disease is on a different footing. A community remains free from chronic disease as long as it lives in accordance with Nature's laws of health (1). This important fact seems obvious, and yet is not taken into account by the authorities to whom students of medicine look for guidance.

People who live under unhygienic conditions fall victims to chronic disease (2). Why? Because their tissues become unhealthy and lose their power of resisting the attacks of microbes.

The most widespread and disastrous weakener of the tissues is toxemia. From a septic focus microbic toxins are poured into the general circulation. The focus may be in the teeth, the tonsils, the gallbladder or the appendix, to name only a few. The commonest and most universal focus of all is in the intestines. Since the tissues are supplied with toxic blood they lose their power of resistance and become vulnerable to attack. Any tissue may be attacked and fall a prey to chronic disease. For instance a chronic gastric ulcer never grows in the stomach of a healthy person. Those unfamiliar with this point of view demand proof; it is all too readily available. Take a case of gastric ulcer:

1. The general appearances are not those of health. The complexion is dirty; the skin dry and scaly, stained and inelastic; the hands cold; the ears red.

2. The history reveals evidence of longstanding stasis. Constipation since infancy with perhaps a more recent transit on to mucous diarrhea. Socalled bilious attacks since childhood.

3. The physical examination discloses evidences of stasis: Thickened portions of the bowel can be felt; the iliac colon nearly always; the terminal ileum in many cases. In many instances the ascending colon can be traced downward over the pelvic brim, indicating ptosis of the cecum.

4. The symptoms, though masked now by the severe pain of the ulcer, can be recognized as those of stasis. They are: Headache, backache, muscular pains, aching joints, neuralgia or neuritis, mental depression, loss of memory and many others.

All the physical signs of stasis are confirmed, and many additional details gleaned, by x ray investigation with bismuth (3).

THE FARREACHING EVILS OF STASIS

Some critics raise the objection that stasis is made responsible for almost every disorder known to man. Let these critics consider what "stasis" means. It means not merely stagnation of the intestinal contents, but their putrefaction and the consequent fouling of the blood and lymph streams by the poisonous products of bacterial action. How can any tissue remain healthy under such conditions? Not a single cell can remain normal, for every cell is dependent for its health on the blood and lymph supply. Clearly it is impossible to overstate the evil consequences of stasis.

Other critics argue that the mere discovery by x rays of stasis does not prove that the disease (say gastric ulcer) is caused by stasis. True enough; but that is not a complete statement of the case. A patient is not merely afflicted with a chronic ailment (e. g., asthma, rheumatoid arthritis and duodenal ulcer) but he shows the other physical signs which make up the picture or syndrome of stasis. Further, the efficient treatment of his stasis (whether surgical or medical) not only causes the disappearance of the chronic ailment, but it abolishes all the manifestations of stasis.

CASES

All the following cases had been under medical care yet no progress had been made till the "static" nature of the ailment was disclosed and appropriate treatment adopted. Then followed improvement so rapid and consistent that there could be no doubting the connection. The cases had been labelled—as usual—by the name of the most obvious end result. This label, though appropriate to the case, pointed to a particular symptom so that treatment had been directed to the relief of this symptom but no account had been taken of the general disorder. The best result to be expected from such partial treatment is a temporary amelioration of a particular manifestation of stasis, but no improvement in the general toxemic state. Such a patient is likely to prove a source of continual anxiety, for as soon as he is relieved of his asthma (say), he falls a victim to rheumatism, neuritis, colitis, appendicitis or duodenal ulcer.

SYNOVITIS

CASE I.—The patient was a male, aged eighteen. The case was labelled "Synovitis of the knee." Since the age of twelve the patient had had attacks of "seediness" lasting one week, with diarrhea, frontal headache, and slight fever (100°) and attacks of sore throat often. At the age of fifteen tonsillectomy had been performed but the sore throats still recurred and colds in the head lasting one month. The patient's complexion was pale and earthy, his tongue was coated, and he had a bad taste in the mouth. He had never considered himself constipated as he usually passed a motion daily before breakfast.

An x ray investigation with bismuth was made. The report was as follows:

Elongated pelvic colon, dropped transverse colon, mobile cecum which dropped into the pelvis in the upright posture, elongation and dilatation of the appendix (this organ was habitually in the pelvis with the ptosed cecum), hypertrophy of the terminal coil of the ileum with torsion of its termination caused by axial rotation of the ptosed cecum, spasm of the large intestine (colitis), distention of the gallbladder and tight pyloric spasm causing twenty hours' retention of bismuth in the stomach.

Full "stasis" treatment was carried out. A Curtis belt was worn, paraffin and colloidal kaolin with saline (Kaylene Saline) administered, belladonna given in an alkaline mixture to overcome spasm, a vaccine from the intestinal flora injected, suitable diet and régime imposed.

The synovitis cleared up within a fortnight. There was an immediate gain in weight, strength and stamina. The patient had a successful university career and took part in every outdoor pursuit. His growth and development, which had been "hanging fire," became strikingly active.

Clearly the synovitis—which came on not as the result of any violence to the knee—was but one manifestation of a general toxemia.

TUBERCULOSIS

Case II.—The patient was a girl of sixteen (the daughter of a medical man) with a socalled white swelling of the knee, diagnosed by her father as tuberculous. Dr. A. White Robertson, judging by the toxic appearance of the girl and the physical signs of stasis, suspected the intestines as the source of her toxemia. The laboratory investigations of her urine and feces fully confirmed his suspicions and, to clinch the matter, her knee cleared up rapidly as the result of an autogenous vaccine which he prepared from her intestinal flora.

This case is most illuminating. Clinically the knee was a tuberculous one. Is it possible to decide whether a knee is tuberculous or not? My reply—a somewhat evasive one—is that it is not possible clinically, though quite easy pathologically. The important point, however, is this. No "white swelling" is tuberculous at first; it is micrococcal. The tubercle bacillus gets in later after the tissues have been devitalized by the micrococcal invasion, but the precise moment of the change cannot be detected clinically. The same is true of the lungs.

My x ray experience and observations convince me that pulmonary tuberculosis is not a primary disease. The earliest pathological change in the lung is a micrococcal invasion of the peribronchial tissues weakened by toxemia (4). Thus, intestinal stasis is the primary cause of pulmonary tuberculosis. Stasis causes toxemia; the lung tissues deteriorate, lose their resisting power, are attacked by the micrococci always lurking in the air passages; chronic peribronchial catarrh is set up; tubercle bacilli can now gain a footing, and behold: one more case of "consumption."

The successful treatment of early consumption depends upon the recognition of its toxemic origin. It is not enough to recommend pure air and sunshine, but the tissues must be rendered healthy by measures for correcting stasis.

ASTHMA

Case III.—Labelled "asthma." The patient was a male, aged seventeen and a half years. He had had bilious attacks since babyhood, with pain in the umbilical region. At seven attacks of asthma began to follow some of the bilious attacks. The asthma was relieved or aborted by a dose of calomel. Dr. M. W. Baker, noting evident signs of toxemia, sent the boy for x ray investigation.

I found the appendix tethered so that it caused a block at the end of the ileum, and obstruction was increased by a tight spasm at the ileocecal entrance. The terminal coil of the ileum was distended, the lower ileal coils overloaded. A barium enema showed that the ileocecal valve was incompetent, the cecum habitually overdistended, the duodenum elongated. At operation the x ray findings were completely confirmed. The appendix was removed and the ileum set free.

The success of the treatment was dramatic. There was no recurrence of asthma—that alone was highly gratifying—and there was a striking improvement in health which has remained excellent for the last three years.

Case IV.—This is a parallel case. The patient was a boy aged seven. Nocturnal attacks of socalled asthma started at the age of six. He had been somewhat lacking in energy though otherwise apparently healthy.

On the assumption that the asthma was toxemic, stasis treatment was instituted, consisting of colloidal kaolin (Kaylene), liquid paraffin, belladonna and suitable diet. The asthma was checked at once and never recurred. The general health improved, the complexion became clear, the mind more alert, the body robust and plump. Now at twelve his health is excellent.

PARALYSIS AGITANS

Case V.—Under the heading of "paralysis agitans," a man of sixty-two placed himself under the care of Dr. S. Henning Belfrage. At fifty-seven he had an attack of socalled ptomaine poisoning with vomiting, diarrhea and fever. Nerve exhaustion followed, and no recovery occurred. The chief symptoms were lack of mental concentration, shakiness of hands and arms, every movement took longer than formerly, e. g., adjusting his collar; mental operations took longer and he was unable to do two things at once, e. g., blow his nose while walking. The complexion was very muddy, the tongue coated and flabby. His previous history was interesting: Constipation since childhood, bilious attacks since adolescence—a dose of calomel gave relief—foul tongue, poor appetite, cold hands. At fifty an operation for enlarged prostate, and at fifty-four an operation for papilloma of the bladder.

The x ray investigation revealed a greatly elongated pelvic colon, a firm kink of the iliac colon binding the bowel down in the left iliac fossa, a tortuous descending colon, a dilated cecum and ascending colon, catarrh of the large intestine (colitic), bands at the end of the ileum anchoring the appendix and causing ileal stasis, pyloric spasm.

Sir Arbuthnot Lane operated. He divided the kink of the iliac colon, removed the appendix and set the ileum free. The last twelve inches of the ileum were very thick walled. Improvement set in at once. Before the wound was healed the complexion had improved and the mind had cleared up "as though a veil had been lifted"; the eyes acquired an alert look in place of their former sleepy appearance; his whole aspect and outlook changed from gloom to brightness; last but not least the paralysis agitans had been cured. The improvement was maintained when ordinary life was resumed. It has lasted eighteen months and has every appearance of permanency.

RAYNAUD'S DISEASE

Case VI.—The patient was a female, aged forty; a typical case of Raynaud's disease, under the care of Dr. Ernest W. Martin. There had been lifelong constipation, and since adult life indigestion, pain, distention and flatulence.

My x ray investigation revealed pronounced evidences of longstanding stasis: Dropping and elongation of the large intestine, a kink of the iliac colon, distention of the cecum, severe catarrh of the large intestine (colitis), catarrh of the appendix, an ileal kink, duodenal distention and pyloric spasm with many hours' delay in the stomach.

Mr. Scott Gillett operated, freed the iliac colon, removed the appendix. Three months after operation the last suspicion of Raynaud's disease had disappeared. The hands were warm and of good color; the patient lived an active life, continued on appropriate diet and régime, and twelve months later the improvement was fully maintained.

BRONCHIAL CATARRH

I have records of numerous cases showing such results as these, but must content myself with one more.

Case VII.—The patient was a girl, aged seven. Bronchial catarrh was her most distressing symptom. The child had always been ailing; she had seen eminent authorities, but had received only palliative treatment for the bronchial catarrh. Then pain had occurred in the right iliac region and a surgeon had removed her appendix—necessary no doubt, but not effectual in curing the catarrh or improving the general health.

Dr. A. Graham-Stewart recognized the pronounced evidences of chronic intestinal stasis—the emaciation, the flat chest, the pot belly and the round shoulders; lateral curvature of the spine, the elbows and fingers overextensible, the skin of the face, back, abdomen and axillæ stained, the face pale, apart from the stained areas. The feces could only be described as a "filthy mess," grossly offensive.

My x ray examination revealed ample evidence of severe stasis. The pelvic colon was much elongated, there was catarrh of the mucous membrane of the large intestine; the cecum was distended and mobile; in the upright posture it dropped into the pelvis and turned on its axis causing torsion of the end of the ileum. There was spasm of the pyloric portion of the stomach due to congestion, and such tight pyloric spasm that the gastric contents were imprisoned many hours.

These findings confirmed the clinical signs so completely that Dr. Graham-Stewart commenced "stasis" treatment at once. The response was immediate. At the end of three months the improvement was so great that her father—who had not seen her in the meantime—could scarcely recognize her as his own child. She had gained a stone in weight (four stone to five stone), she was plump and healthy looking, her face was of good color, her skin soft and smooth, *not* stained. There were no long hairs on the back or limbs—they had been shed. The joints were much firmer and less overextensible. The spine was straight.

The treatment that had effected the "miracle" was as follows:

A. Medicinal: Kaylene saline (5) (colloidal kaolin with saline aperient), liquid paraffin, belladonna in an alkaline mixture.

B. Mechanical: A Curtis belt; daily general massage and exercises; rest in bed one hour before and one hour after lunch; fourteen hours in bed at night. Douches of normal saline to wash out the large intestine three times a week.

C. Diet: whole meal bread; fresh fish, fresh dairy produce: milk, cream, butter, eggs; fresh greens, lettuce, mustard and cress, etc.

D. Régime: Fresh air and sunshine: As much of the day as possible was spent out of doors.

THE TREATMENT OF STASIS

Dr. Graham-Stewart's case (just described) may be taken as a model for the principles of treatment. A complete diagnosis is essential. Only an x ray examination with bismuth can determine the exact position of the viscera, the length of the pelvic colon and the existence of kinks and spasms.

Where there is a kink producing constant tight spasm, it must be freed by surgery before other treatment can succeed. When there is an abnormality such as an elongated pelvic colon, the patient must continue treatment throughout life, or the symptoms will surely return. The best drugs for continued use are those which act in the digestive tract and are not absorbed. Liquid paraffin is one of these; another is colloidal kaolin which I introduced recently (5).

Ordinary purgatives are unsuitable for continued use, since they irritate the mucous membrane, and do harm in the long run. Intestinal antiseptics are not as desirable as some believe, for if effectual they kill not only the pathological microbes but also those necessary for the proper functioning of the large intestine. The Curtis belt must be worn if the viscera are ptosed, but the belt must not be permitted to perform the entire function of the abdominal muscles. Although the Curtis belt must be worn the patient must not be allowed to discontinue abdominal exercises. The patient must acquire the habit of retracting his abdomen from the belt. At first this requires a conscious effort but after a week or two it becomes a habit. In the convalescent stage much benefit is derived from appropriate exercises such as the admirable system devised by Mr. F. A. Hornibrook (6). These exercises are designed to strengthen and tone up all the abdominal muscles.

In regard to diet the nonmedical public can find trustworthy guidance in Dr. Leonard Williams's book (7)also Plimmer's pamphlet on vitamines (8).

DANGERS OF TOXEMIA

It is distressing to realize the extent to which civilized nations have become a prey to chronic disease consequent on toxemia. It is an insidious danger making steady inroads into health and stamina. But gradual though the deterioration of tissues may seem, disaster may be close at hand—disaster shattering in its tragic suddenness. A flaming appendix, a perforated duodenal ulcer or gallbladder, retrobulbar ocular neuritis leading to complete or partial blindness and cancer (9)—these are but a few of the innumerable calamities that lie in wait for the toxemic.

The author's references will appear in his reprints.

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Encephalitis Lethargica

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Encephalitis lethargica receives its name from its most striking and general symptom but its chief symptom may be just the opposite to sleepiness, viz., sleeplessness. Indeed, its manifestations are protean, depending on the position, the extent and the severity of the lesions in the central nervous system. The symptoms may vary from the slightest indication of a central irritation, such as a persistent hiccough, to those of an acute meningoencephalitis with retracted head and death within a few days, or even hours, lumbar puncture giving a clear fluid. If the lesion is in the region of vital centres in the medulla, death may be so rapid as almost to simulate one due to apoplexy. The lesions may be confined to the anterior cerebral hemispheres, the only symptoms being mental. The symptoms may come on during, or immediately after or some time after an attack of influenza; but although this relationship is of extreme significance the infecting agent may not attack sufficient tissues to produce any such generalized symptoms. It would be impossible in the time at my disposal to recapitulate all the symptom complexes that have arisen; suffice it to say, that in any case of queer central nervous complex of symptoms this infection should be thought of and the diagnostic method I suggest below tried.

The deathrate varies in different outbreaks from twenty per cent. to over seventy per cent. of cases attacked. The symptoms may entirely clear up or so many brain cells may be destroyed that the unfortunate patient may have to live his pitiable life in a state of helpless palsy.

PATHOLOGY

There is nothing typical about the pathological changes. The infection appears to be carried by the blood stream, for the walls of the vessels seem to be the first attacked, producing lesions which may be so destructive as to be followed by hemorrhages not only from capillaries but from arterioles and venules. Where the infection is less potent, the perivascular lymphatic is infiltrated with small mononuclear cells, the nerve tissue in the neighborhood being edematous, and the nerve cells are seen undergoing degeneration.

Where the inflammation is more acute, the nerve tissue is infiltrated with red corpuscles, polynuclear leucocytes, and mecrophages, some of the latter at least being derived from the endothelial cells. Polynuclear leucocytes may be seen embedded in the degenerating nerve cells. Some of these da Fano describes as containing minute bodies, which, he thinks, may be the cause of the disease.

If the patient survives and his immunizing response is sufficient, the whole condition may resolve leaving no disability, or the destroyed portion is replaced by sclerosis producing permanent disease. In the acute fulminating cases, the condition may exactly simulate meningococcus meningitis with pus in the cerebrospinal fluid. Such a case was the first I saw of the influenza epidemic in May, 1918, in a boy of five years dying in a few days. The influenza bacillus was isolated in pure culture from the purulent fluid. More commonly there are the symptoms of meningitis, some stiffness of the neck and so on, with symptoms of lethargy, and a clear cerebrospinal fluid sometimes containing more lymphocytes and glucose than normal, sometimes not. In some of these cases the lumbar puncture does not indicate increase of cerebrospinal fluid around the cord, but at postmortem there is marked increase of it in the meninges and cisternæ.

It must be remembered that such brain lesions can be produced by many microorganisms and that because animals have been given encephalitis with these it does not rule out the influenza bacillus. Streptococci capable of producing poliomyelitis, if introduced under the meninges, must be as common as possible in our chronically infected mucous membranes.

ETIOLOGY AND BACTERIOLOGY

The state of opinion as to the etiology of the disease is hopelessly confused, authority asserting that nothing whatever is known of the cause except that the disease has been conveyed to animals by material which has been passed through a filter. This suggests to most minds that its origin is beyond our present means of investigation.

It is, however, the opinion of some epidemiologists that there is a distinct relationship between the pandemics and epidemics of influenza and encephalitis lethargica. I believe Sydenham realized this connec-

tion. Some of those who acknowledge this assert that the infecting agent of encephalitis may give the symptoms of influenza, and that two separate diseases may be confused, since in an epidemic of influenza the symptoms may be nervous, the onus falling on the central nervous system instead of on the respiratory or the digestive system. It appears to me, however, that the epidemiological relationship is too significant to be ignored.

But, if this is so, what is the cause of influenza? Again, authority seems to be of the opinion that it is due to a mysterious filter passer. When confronted with the fact that, when proper means are taken, the Pfeiffer bacillus can be isolated from the vast majority of cases, the answer is that this was not so during the original pandemic but only occurred later on in succeeding epidemics; that Pfeiffer himself could only isolate it in fifteen per cent. of cases. This latter fact is quite true, as ordinary blood smeared agar medium or other unsuitable medium was used, and no precaution taken to prevent material getting cold between the patient and the incubator. But it is quite untrue to say that the influenza bacillus could not be isolated from practically one hundred per cent. of the cases in the original pandemic. Those of us who used a proper medium, such as agar containing ten per cent. of unheated blood, at body temperature at the time of insemination and kept warm on its way to the incubator, did isolate the bacillus in over ninety-five per cent. of all cases in the acute stages during the original pandemic. Moreover, with a pure antigen of the bacillus we, in the very midst of the pandemic when in University College, where most individuals were infected, produced protection in over eighty per cent. of the cases. Such a pure antigen rapidly aborted the disease and, if given in sufficient dose, would produce transient symptoms of the disease.

To my mind such evidence was and is sufficiently conclusive. How conclusive such evidence of pathogenicity is, I was able to show in the case of such a fatal disease as diphtheria in fowl, from which I isolate a microbe morphologocally and culturally similar to the influenza bacillus. Since, with a pure antigen of this microbe, I was able to prevent and cure, during the epidemic of diphtheritic roup (that is, significantly to reduce the morbidity and mortality), I knew I was dealing with the cause. The final proof was open to me in this case, and I was able to reproduce the disease in hens from an uninfected source with the microbe.

How then are we to account for the symptoms of influenza and encephalitis being transferred to animals by material passed through filters, and such experiments as McIntosh and Fildes who produced encephalitis in animals with filtered material from the brain of a patient dead from influenza, even when the brain had been preserved in glycerine, a significant experiment if I establish my contention as to the cause of encephalitis (for a microscopic microbe must be looked for in such diseases as smallpox and rabies).

Microbes are no exception to the biological law that morphology is influenced by environment. In the case of microorganisms, generations succeed each other so rapidly that change of morphology is very easy to demonstrate. They have exceptional capacity to adapt themselves to an inimical environment, some individuals being able to produce ferments capable of digesting the environment in which they are and transmitting this capacity. This adaptation and subsequent multiplication accounts for the incubation period after infection. Microbes are strikingly pleomorphic. As some of you may remember, I demonstrated the pleomorphism of Kedrowski's leprosy bacillus, many years ago, at the section of pathology and bacteriology, showing it as a coccus, a short bacillus, a diphtheroid, a streptothrix, all of these both acidfast and nonacidfast.

When first isolated the influenza bacillus is most minute requiring the highest power eyepiece for its identification. As it adapts itself to a saprophytic existence, by culture, it gets much larger, very long forms appearing, quite unrecognizable as the influenza bacillus if we did not know their derivation. I am not at all sure that in some carriers it does not exist in such an enlarged form and therefore is not recognized.

There are two ways in which a microbe may become small enough to pass through a filter, if indeed they are essentially different; that is, by splitting into two the product remaining small, or by breaking up into splitta corresponding to the infective granules of protozoa, and familiar to everyone in the case of the tubercle bacillus as Much's granules. It is possible that such splitta are resistant under inimical circumstances, such as cold, starvation, or immersion in glycerine, and in the case of such a delicate organism as the influenza bacillus, which must in ordinary circumstances be transferred from warm mucous membrane to warm mucous membrane if infection is to be transmitted enabling it to survive. In the body itself, an infecting microbe may be present doing its destructive work in a particular region, and yet it is quite impossible to demonstrate it in section or smear. The pus of a tuberculous abscess is a well known example; and yet, when such material is injected into a susceptible animal, infection is certain. From material infected with other microbes, a profuse growth may be obtained on culture media in which no microbes could be identified in smear or section. In the tissues the microbes are growing in a reduced oxygen tension; a potent way of altering the morphology of some microbes in the testtube. It is quite possible, however, that under some circumstances the microbe is seen in the tissues and not recognized owing to its changed appearance. I think it quite possible, for instance, that the minute intracellular inclusions demonstrated by da Fano in the brains of patients dead from encephalitis lethargica are the infecting influenza bacilli.

It appears to be generally accepted by authority that microbes which pass through a filter belong to a special class of pigmy microbes that never get bigger if their environment is changed. This is not so in the case of the class of microbe we are considering. There may be such uniform pathogenic microbes of course. Let me give an example of the passage by N. S. Ferry of a minute bacillus, no smaller, however, than the influenza bacillus, the Bacillus bronchisepticus described as the cause of canine distemper, a hardy bacillus which will grow on all ordinary media. It varies in size from 0.5ux0.5u (that is a minute coccus) to 2.3ux0.5u

(that is a minute bacillus). Ferry took a dozen candles each of Berkefeld V, Berkefeld N and Chamberland F candles and very carefully tested them by air pressure under water. Of the thirty-six he found that all but seven failed to satisfy the high standard of efficiency he set. The microbe was grown both in broth and on agar, the broth was filtered direct, the agar culture suspended to about the same density as the broth culture. The pressures used were gravity, fifteen pounds negative and 225 pounds positive. The results of the work proved conclusively, according to all the rules laid down for filterable viruses, that the Bacillus bronchisepticus is a filterable virus

Now Carré has demonstrated, and it is generally accepted, that the cause of canine distemper is a filterable virus, and that the work of Ferry, McGowan and Torrey describing the Bacillus bronchisepticus as the cause is therefore wrong, and the same holds good for hog cholera. This latter case has been held up to me as showing that I was wrong in asserting that the influenza bacillus was the cause of influenza, since the discovery of a filter passer in the case of influenza entirely ruled out the influenza bacillus as anything but a secondary infection, as it did in the case of hog cholera. Rosenow has shown that the streptococcus of anterior poliomyelitis can pass through a filter and the Leytons that a streptothrix in its minute stages can do so too. Moreover, it is generally considered that if an organism can pass through a filter, it is invisible. Nothing of the sort! Many of the filter passers can be demonstrated in their minute forms microscopically. The passage through a filter, therefore, does not rule out a microscopic microbe as the cause of a disease. I have always asserted this in the case of the influenza bacillus.

SUMMARY

1. Influenza is caused by the influenza bacillus, and this fact was established when a pure antigen of it prevented and rapidly cured the disease producing general and focal reactions.

2. That such reactions establish pathogenicity, I have shown by a pertinent animal experiment in the case of a similar microbe which I have established as the cause of diphtheria in fowl.

3. The demonstration of a filter passer as the cause of a disease does not rule out any microbe as pathogenic, as there may be a minute form of it capable of passing through a filter.

Similar evidence identifying the influenza bacillus as the cause of encephalitis lethargica is available. It is a local manifestation of an infection with the influenza bacillus, for a pure antigen of the influenza bacillus produces general and focal reactions and cure—that is, provided it is used before so many nerve cells are destroyed that recovery is impossible. The etiological conclusions come to from this evidence has been confirmed by the isolation of the influenza bacillus from the blood of eight out of eleven cases of encephalitis lethargica during the acute stages, by Dr. M. Enright, assistant to the professor of pathology, University College, Cork. Is it likely that microbes so isolated were secondary infections?

DIAGNOSIS AND TREATMENT

When the meningeal symptoms are predominant the diagnosis lies between meningitis due to pyogenic organisms, influenzal meningitis and tuberculous meningitis. A lumbar puncture with culture distinguishes between the first two, as the production of pus in the cerebrospinal fluid by the influenza bacillus is rare but always must be remembered. If the fluid is nonpurulent there is much more difficulty, as the only point between the fluid in cases of tuberculosis and in some cases of encephalitis lethargica is an increase of copper reducing substance in that of encephalitis.

If the meningitis be accompanied by lethargic symptoms, or if the lethargica symptoms predominate or are present alone, the clinical diagnosis is simplified, as it is if the brain symptoms occur in an ordinary attack of influenza. The same difficulty arises in the chronic cases with localized lesions such as incoordination pointing to a cerebellar lesion or such like—a history of a previous attack of influenza being suggestive. All these uncertainties can be easily cleared up if a potent antigen of the influenza bacillus is available. In the acute cases the result of giving a one million dose is frequently remarkable. I have had a profoundly lethargic patient sitting up talking sensibly in two hours after such a dose, another in six. Sometimes there is a negative phase with increased symptoms which, with involvement of the meninges, may necessitate lumbar puncture to relieve pressure, just as a similar reaction does in the active immunization of meningococcus or other suppurative meningitis. The series of one, two, three, four million may be given, the intervals being dictated by reaction. As a rule, these doses are all that is necessary in the acute cases. If the case has lasted longer before treatment has commenced, the doses must be increased until the desired result has been obtained; it is rarely necessary to go further than twenty million. So responsive are patients with lethargy to this antigen that they furnish a test for it, so that, if they do not respond, it is because the antigen is impotent. A small but typical series treated in this way is described in the *British Medical Journal* (March 27, 1920). Many others since then have obtained similar successful results. Let me give a few typical cases:

Case I.—A medical student had had for some days a temperature ranging from 100° to 102° before taking to his bed. He complained of seeing double. He became increasingly sleepy, was delirious, and had hallucinations; when spoken to he could be roused up, and talk fairly sensibly. His conjunctivæ were congested, he was badly constipated, and passed urine under him. He had, in fact, symptoms suggestive of lethargic encephalitis. On the chance that the infection might be caused by the influenza bacillus (the case occurring during the epidemic) I gave him subcutaneously two and a half million pure influenza antigen. The improvement was marked at the end of twelve hours. Thirty-six hours later I gave him five million, and forty-eight hours later seven and a half million. After this he had complete control of his functions and he was no longer lethargic, although his memory was still defective. He still had difficulty in reading, and his temperature was not quite normal—99° F. I then gave him ten million in the morning, forty-eight hours after the last dose: that evening his lethargic symptoms returned in full intensity, although there was no further rise in tem-

perature. His mind did not become normal again for two days. He made a rapid convalescence, but could not read for any length of time or study for some months. The focal reaction after the last dose makes it to my mind, certain that the influenza bacillus was infecting his brain.

Case II.—An elderly gentleman when first seen by me had been ill for a week with lethargy and bronchopneumonia. Micrococcus flavus, streptococci, and influenza bacilli were isolated from his sputum. He was exceedingly ill. The temperature was 102°, the pulse 90 to 100. He was given at once a mixed antigen containing the above microbes pending the making of an autogenous antigen. The first dose was one and a quarter million of each. There was a distinct improvement in twenty-four hours. Forty-eight hours after the first dose he was given two and a half million of each. The next dose of his own antigens contained the same amount and was given at a similar interval. The doses were continued up to twenty million of each. All his symptoms and physical signs rapidly cleared up so that at the end of ten days he was convalescent. He had no recognizable reactions after any dose, and made an uninterrupted recovery.

Case III.—A woman, aged twenty-two, became ill on December 25, 1919. She felt exhausted and sleepy, and in her sleep talked continuously, was very restless, and had jerking movements of the limbs. She had been overworking, and had had two falls the week previously; she had had a nervous breakdown at the age of sixteen, when she suffered from undue sleepiness; for some time I thought her symptoms could be similarly accounted for. When wakened from sleep she roused with a start, and told me she was very well; after a few minutes her eyes became fixed, the eyelids closed, and she was asleep again, resuming the muttering and restless movements. She roused occasionally, and took food well. She was constipated, but got out of bed to urinate. At first she used to get up to sit by the fire, but always went to sleep in her chair.

After a time, since the sleepiness was getting worse rather than better and her memory for my previous day's visit was a complete blank, I determined to give her a dose of two and a half million pure influenza antigen. It was given at 10:30 a. m. on January 13th. She was asleep within five minutes of getting it. Two hours after she woke up excited, nervous, and shivering, and was given ten grams of aspirin. The unpleasant symptoms passed off in an hour or two, and that evening she was much better, and able to talk rationally, and had no symptoms of lethargy. She slept much more normally that night and was much less restless during her sleep.

When I saw her next morning she laughed and talked to me quite naturally. She improved steadily for some days, then began to get sleepy again and the other symptoms returned. On January 20th I gave her two and a half million, and she had the same symptoms as before but to a less extent, and next day was awake smiling and talking to me normally. Three days later, on January 23rd, I gave her three and three quarter million; she went to sleep after it, and remained lethargic that and the whole of the next day, being roused up to take her food and then going to sleep again. Forty-eight hours after she was herself again. Since then she has been given five million on February 2nd and five million on February 13th; this dose was delayed by three rather severe attacks of palpitation and then an attack of colitis. On February 16th she was given seven and a half million and on February 20th ten million. On February 23rd she was quite convalescent. I have continued her doses up to twenty million so as to leave a margin of safety. The temperature was normal throughout.

Case IV.—The patient, a girl aged five years, living in the South of Ireland, was taken ill on February 18, 1921, with shivering, drowsiness and headache most intense behind her eyes. She was seen (by D. C.) on February 21st, when her temperature was 102.6° F., the pulse 120. She was asleep, and could only be roused with difficulty; when the eyes were open the conjunctivæ were seen to be injected—the typical pink eye of influenza. She was very constipated, necessitating enemas, but she had not incontinence of urine. There was a watery discharge from the nose. She had muscle twitchings—marked in the eyelids. When roused she answered questions slowly but intelligently, but was profoundly asleep again within a few minutes. Her temperature fell to 99° and her pulse to 95° by February 24th, but the lethargy seemed to increase, the patient only being awake when roused to take food. W. M. C. was then consulted, and one and a quarter million Bacillus influenza antigen were given on the morning of March 2nd under the skin of the hip; her temperature was then 99° and the pulse 95. She was asleep again a short time after the injection. At the end of six hours she woke up quite bright and cheerful; the temperature had fallen to 97.4° and the pulse to 76. She remained awake for four hours. On March 4th she remained awake from 9 a. m. to 6 p. m.. The drowsiness then gradually increased again until, on March 10th, she was given two and a half million. She slept for three hours and woke up bright and gay. Next day (March 11th), a reaction appeared. She slept a good deal. She complained of headache. The temperature rose to 99.4° F., the pulse to 115. The discharge from the nose came on again, and the conjunctivæ were injected. These symptoms had passed away by the next day, and she has remained normal in every way since. She was given a few more increasing doses of antigen.

Case V.—Mrs. X., an elderly lady whom I had previously treated successfully for sprue, was taken ill on a Saturday evening with a slight rigor. Next day she had fever, vomiting, and diarrhea, and later that night severe headache, retraction of the head, Babinski and other signs of meningitis. When I saw her next morning, in consultation, there was less rigidity of the neck, and I thought typical symptoms of encephalitis lethargica. I gave her a dose of antigen containing one and a quarter million influenza. That afternoon the meningeal symptoms increased and a lumbar puncture was done, clear fluid being withdrawn. Next morning she had regained consciousness and the meningeal symptoms had almost disappeared. She made an uninterrupted recovery without further specific treatment.

The treatment of palsied cases is, of course, most

unsatisfactory. Large numbers of nerve cells have been destroyed and cannot be replaced. Cases treated by a proper antigen do not get palsy, just as cases of influenza treated at once with a proper influenza antigen do not get pneumonia. It is, however, always worth while trying, and I have seen such cases get sufficient relief as to be able to return to work, but very many of them remain crippled. In the treatment of such cases there is always the possibility of a secondary infection, so that it is well to make a bacteriological examination of the urine and include the antigens of any microbe found. Finally, if the influenza bacillus is not the cause of encephalitis lethargica it is an exceedingly fortunate thing that it furnishes such a potent method of treatment. To me the evidence is conclusive that it is.

Medicolegal and Sociological Aspects of Epidemic Encephalitis*

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While epidemic encephalitis first appeared in this country in 1918, it was not until several years later than the seriousness and frequency of its sequelæ began to be realized. Thus, at the meeting of the Association for Research in Nervous and Mental Diseases in December, 1920 (1), when this disease was investigated, little time was devoted to this phase of the subject. They were mentioned as occurring but the impression conveyed was that they were frequently recovered from. Since this time considerable has been learned that was not known then. The literature for the past two or three years has contained a large number of papers devoted to a consideration of both permanent symptoms that followed directly the acute attack and of those which developed some time later. No one, so far as I know, has specifically called attention to the aspects embodied in the title of this paper. To be sure, those who are thrown into contact with considerable numbers of these cases recognize their importance. Those whose work is not along neurological and psychiatrical lines do not.

Both mental and physical states occur which may bring the patient either into conflict with the law or cause him to become a public charge. Before discussing these, it seems of some importance to call attention to a peculiarity of the lethargy or stupor which so frequently is a symptom. This is, that while apparently in a stupor, they can be easily aroused, and when aroused often show alertness and mental clearness. Hohman (2) says "The clearness and alertness on being aroused is surprising; one would not expect as much wideawakeness in a normal person aroused from sleep." I have seen a patient awake from a lethargic state and correct a mistake in an arithmetical calculation that was made during a conversation held in her presence. While in this state they not infrequently remember statements made by others in the room. Another peculiar feature is that periods of delirium, stupor and mental clearness may alternate. Kirby and Davis (3) mention a patient who stated that "I was out of my head at night but sensible during the day." The question might arise, Is such a patient competent to make a will? Some, no doubt, are. Every case, however, must be decided on its merits as on the other hand many are incapable of sustained or logical mental effort.

The sequelæ may be divided into three classes: 1, Those which follow directly a well marked and recognized acute attack of the disease; 2, those which follow an unrecognized acute attack; 3, those which do not develop until some time after the attack. The first class as a rule do not cause errors in diagnosis; the other two do and it is to these that I wish to call attention.

It is of the greatest importance to bear in mind that subacute cases occur (4), in which the onset is insidious, the symptoms those of a mild influenza type for which the patient does not either go to bed or consult a physician. Later on, in some, symptoms of a typical acute attack may develop; in others, after a long period, some of the sequelæ.

It is of equal importance to remember that typical cases apparently cured may develop symptoms after several years. Weinberg (5) says: "It is important to bear in mind that the severity or mildness of the condition during the acute stage has no definite relation to the sequelæ." He mentions a patient who only came to the hospital because of pain in the back which had been erroneously diagnosed nephrolithiasis. Schaller and Oliver (6) report a case persisting for over a year, whose main complaints were abdominal pain and gastric distress, thought to be due to chronic appendicitis. Operation proved the falseness of this diagnosis and autopsy later, the existence of a chronic encephalitis. The first stage of this man's illness was thought to be influenza.

The mental sequelae vary from impairment of memory and disturbances of sleep, the latter often consisting of abnormal drowsiness during the day and insomnia at night, to mental deficiency and insanity. Children are especially prone to develop mental disturbances. These have been summarized by Ebaugh (7) as "Total change in character and disposition, with hyperkinetic states, leading to behavior oddities, consisting of emotional lability, sexual precocity, general incorrigibility and mental deficiency." Leahy and Happ (8) state after studying a large number of children that those patients who apparently had made a complete somatic recovery, not infrequently showed some striking form of abnormal behavior, among which they mention purposeless, impulsive motor acts, marked irritability, definite attention disorders, distractibility, insomnia, sexual precocity, and intense eroticism. It is easy to see how such symptoms may bring these children into conflict with the law and that many of them will be-

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come public charges. That many of them, previously honest, develop strong tendencies to steal, and others to commit sexual offences, is important in this connection.

Behavior oddities probably do not develop so often in adults as in children. They do, however, occur. Other mental states which may lead to diagnostic error and injustice are hypomanic states, especially associated with great loquacity; (2) Korsakoff's psychosis, paranoid states, suicidal and homicidal impulses and symptoms resembling those of paresis. As Korsakoff's psychosis is usually due to the excessive use of alcohol, it can readily be seen that jumping at conclusions may lead to a diagnosis which may do great harm to the reputation of the patient and might prevent, for instance, his collection of insurance. House (9) reports a case of a man who a year after the acute attack developed delusions of persecution, with hallucinations of sight and hearing, directed against his wife. He transferred his life insurance to others, changed his will, eventually attempted to kill her and then committed suicide. Paresis may be simulated by both mental and physical symptoms. Kirby and Davis (3) mention a case in which there was an acute onset with insomnia, speech and expression of grandiose trend, as talking of wonderful inventions, etc. As will be detailed later, physical symptoms resembling those of paresis may occur.

Neurasthenic states, long persisting, are not uncommon; for instance, Hess (10) examined seventeen cases from one to two years after apparent recovery. They complained of diminished capacity for work, poor memory, weakened perceptive faculties, lack of will power, energy and change of character. Many such patients are thought to be merely lazy as for example: A young man twenty years old was brought to me by his father, who made the statement that the boy had become lazy and careless about his person and could not be gotten out of bed in the morning. "If I said there was nothing the matter with him, he was going to knock hell out of him." Inquiry elicited that three years previous he had had an attack marked by desire for sleep, "turning in of the eyes and seeing double." He was not, however, confined to bed. The present symptoms had developed since. One year later, or four after the acute attack, tremor of Parkinson's type developed. Morbid impulses and phobias have been reported (11).

An important case illustrating mental sequelae of the type indicated as Class 3 in this paper is reported by Goodhart and Cottrell (12). In brief, a young man of previous irreproachable conduct, several years after what was believed to be a complete recovery from encephalitis, developed marked sexual aberrations. Otherwise mentally he was normal and his behavior good. Examination showed some, but not marked, physical signs of the disease.

Physical symptoms that persist, especially if those of the original illness have been mild or have not been noticed, are not infrequently mistaken for either syphilis or hysteria. Those referable to the eyes, especially resemble those of the former. Duncan (13) in a follow-up several years later of 101 cases who had had the disease between March, 1918, and September, 1921, found diplopia in ten unequal pupils in twenty-nine, irregular and eccentric pupils in twenty-eight, defective reaction to light in twenty-one, defective reaction to accommodation and convergence in twenty-nine, typical Argyll-Robertson pupils in two, and ptosis in six. In addition, it might be stated that he found mental symptoms of different degrees in fifty-six. Probably the most serious being three children who stole whenever opportunity offered, although previously they had been honest. Grossman (14) in a series of cases found 30 per cent. had pupillary disturbances. Five of these were of the Argyll-Robertson type; one developed primary optic atrophy. That these symptoms are common to syphilis of the nervous system will at once be recognized. Another important fact is that either a luetic or paretic curve may occur with the colloidal gold test. (15). To be sure, these occurred in acute cases, but again it must be remembered that the acute symptoms in many cases are mild and atypical. Hohman (16) has reported several cases which presented, among others, a peculiar ocular symptom. This was a forced conjugate upward movement of the eyes. This symptom, he states, has been known to ophthalmologists only as a symptom of hysteria. His cases were undoubtedly due to encephalitis. One of the patients had been discharged from his position as a street car conductor on account of it, and one, while she had had previous acute symptoms of the disease, they were so slight that no attention was paid to them at the time. Epileptic convulsions (17) may result and as these in adults are not infrequently the result of syphilis, care must be taken in arriving at an opinion. This is especially so if pupillary symptoms are also present. That a mistaken diagnosis of syphilis may cause great injustice and trouble for a patient in many ways is evident. In this connection it may be stated that many physicians make this diagnosis too lightly and without sufficient evidence.

Various peculiar disturbances of respiration (18) not infrequently result. The usual one is paroxysms of rapid breathing. Somewhat similar symptoms may be due to hysteria. A mistaken diagnosis may be serious. The following brief abstracts of the histories of cases are illustrative of the foregoing.

Case I.—I have recently seen a man who received a blow on the head at his employment. He was able to return to his work and had no trouble for a week. Then he stated that he developed diplopia, which persisted for several days and was alternately stuporous and delirious for a week. He had fever and was confined to bed for three weeks. Two months later he developed spells of rapid breathing, which have been growing worse until the present time. The spells resemble very much the breathing of one who has undergone some great physical exertion. He has been able to work some until a month ago, when he had to cease, and he has applied for compensation. Several physicians who examined him for an insurance company stated that it was hysteria, which it evidently was not.

Case II.—A man, twenty-three years old, presented a typical Parkinsonian syndrome of encephalitis, which he had had in 1921. The interesting point is that the tremor and present disability did not appear until three years later and followed a fall from a bicycle. Since this time also he has been drowsy and unable to work.

Case III.—A man, thirty years old, was well until eighteen months before being seen by me, at which time he was said to have had a nervous breakdown. This was said by his physician to be due to his teeth, a number of which were drawn. Inquiry elicited the facts that he then had tremor, diplopia and pains in the head and shoulders. He has been unable to work but little since and his brother who was with him suggested that he was lazy. Examination showed Argyll-Robertson pupils, tremor of the hands, a peculiar clonic spasm of the masseters, as if he were having a chill, insomnia, etc. No serological evidence of syphilis was present.

Case IV.—A man, twenty years of age, in 1920 had an attack in which he was confused, and hallucinated for several days. He also became jaundiced for which his gallbladder was drained. Several months later he noticed difficulty in walking and he developed the Parkinsonian syndrome. For some time it was noticed that while he could not walk well, he could run and dance. This is a peculiarity which sometimes occurs in these cases and may lead to suspicion that the patient is suffering either from hysteria or simulating.

Case V.—A man, forty-five years old, was well until 1920. He then had encephalitis but apparently recovered and worked as usual for three years. He then developed a Parkinsonian syndrome and is now helpless.

Case VI.—A young man, aged twenty, had encephalitis in February, 1920. He remained well until June, 1923, when he had an epileptiform convulsion. This was followed by the gradual development of the Parkinsonian syndrome.

Case VII.—A man, forty-three years old, had unequal and rigid pupils. This was thought by several physicians to be luetic. Serological tests and history were negative. Inquiry determined that three years previous (1919) he had had diplopia associated with headache, general muscular pains and fever.

The notes of the following cases have been given me by Dr. William Drayton, neurologist to the Municipal Court of Philadelphia. They are only a few of the many such which come under their observation. They are interesting because either the existence of a previous encephalitis was not recognized or the patient was thought to be cured. They were brought to the court as incorrigibles in the case of the children, as derelicts either in supporting their families or in the observation of the ethical requirements of society, in the case of the adults.

Case VIII.—G. T., aged eleven; was in Grade 5B at school before having encephalitis; afterwards she wandered away from home, stayed out all night, went to Chester with a man.

Case IV.—I. M., aged eight—after encephalitis in March, 1923, has been irritable, kicks and bites her mother who cannot control her. Her mentality otherwise is above normal.

Case X.—G. M., aged twelve years—did well in school until 1921, when she had encephalitis; since then she has not advanced, lies, runs with the worst girls she can find and masturbates.

Case XI.—A. P., aged seven—was ill several weeks in February, 1923, during which he slept most of the time. Since then he breaks windows, beats other children, is nervous, and has a violent temper.

Case XII.—V. L., aged eight—had encephalitis in 1921 when he was ill for six weeks. Since then he has set fire to the house three times, stays out late at night, hits other children, urinates and spits on the beds of other people, does not sleep at night and talks to himself. It is interesting that his parents attribute the symptoms to his having been hit by an automobile.

Without proper study such children might be considered as merely bad and not altogether irresponsible especially as some carry out intelligence tests well.

Case XIII.—A. W., aged twenty-five—had an illness in 1918 in which she was drowsy for a long time. This was thought to be influenza. Prior to this she was an inspector in a manufacturing plant and had been four years in one place. Since then she has been continually discharged from her positions, stands about staring into space, and has a violent temper.

Case XIV.—H. W., aged twenty, was normal until 1921, he then had encephalitis, after recovering from which he was dopey, grabbed girls on the street by the legs, for which he has been sent several times to the house of correction. He also masturbates continually.

Case XV.—J. C., aged thirty-seven—was well and normal until 1920. He then had an acute illness, undoubtedly encephalitis, but which was attributed to poison liquor. Since then he has not worked, his temper is violent, he is extremely hypersexual and has threatened to kill his wife for not submitting to his embraces as often as he desires.

It will readily be admitted that many of these cases may come into conflict with criminal law for more or less serious infractions. It will also be admitted that they are irresponsible although some of them, if guilty of homicide, might, by our archaic system in deciding such cases, be adjudged responsible.

Many of them may also have a bearing on civil law, in reference to negligence and compensation.

I have mentioned three cases where the symptoms within a brief period followed trauma (I, II, XII). While it is possible that the disease would have developed anyhow, it must be borne in mind that trauma may excite the symptoms of organic nervous disease, especially in those predisposed. On the other hand it must be remembered that patients frequently attribute their condition to a previous accident although they either may have been present and not noticed or too long a time has elapsed between the trauma and the appearance of the symptoms. A careful history in such cases is imperative.

SUMMARY

Epidemic encephalitis may occur without the classical symptoms of the acute stage and this stage is often unrecognized. Such cases may develop physical and mental symptoms later than simulate those of other nervous diseases. Typical cases apparently cured may develop such symptoms after a varying period of health. The physical symptoms may resemble those caused by syphilis, neurasthenia and hysteria; the mental, especially those due to syphilis, alcohol and other toxemia. Sudden changes in personality and behavior, especially in children, should arouse suspicion as to the possibility of the condition being postencephalitic. In children it must be

remembered that the child may be apparently bright except for its bad behavior. Criminal tendencies may be so caused. The question whether a trauma of the head can predispose to the development of the acute attack and excite the sequelæ in one who has had the disease must be considered. Patients in the stuporous state may hear and remember what is said in their presence and may have periods during which they are mentally alert.

The author's references will appear in his reprints.

Etiology of Epileptiform Convulsions

A Study of Two Hundred and Ten Case Histories

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A series of 210 consecutive cases of epileptiform convulsions has been analyzed with a view of determining their etiology. This work is based on the following principles:

1. An epileptiform convulsion is a symptom.
2. A convulsion may be a symptom of a functional or organic disease complex, or of the entity called idiopathic epilepsy.
3. There are some pathological conditions which are generally considered capable of producing epileptiform convulsions.
4. Cases in this series may be classified during the study as symptomatic and idiopathic; the symptomatic group (fifty-seven) constituting those in which a recognized cause of convulsions exists and appears to be the only cause; the idiopathic group (153) constituting those in which no adequate cause is found.
5. No work of this kind is of value unless the cases are carefully checked with a nonepileptic series. The nonepileptic series in this paper consists of two hundred consecutive cases in which none of the nervous manifestations which are to be considered as having an hereditary influence on epileptiform convulsions occurred. It will be noted that the diagnoses in the two series were made by the same physicians and under the same conditions. This eliminates largely the personal element and the influence of opinion.

Throughout this paper all doubtful cases have been excluded, and only very definite ones used; e. g., if a patient is "occasionally" constipated or uses cathartics "once in a while," that case is not used in a study of constipation. All doubtful ones are considered unknown.

The cases were studied under the headings of hereditary taint in ancestors (not siblings, since this is not heredity), age, sex, constipation, basal metabolism, blood sugar, blood pressure, hemoglobin, association with migraine, differential blood count and x ray findings. These headings will be taken up in turn. Throughout this paper the symptomatic group consists of the following: Arteriosclerotic, fifteen, increased intracranial pressure, eight, Jacksonian convulsions (exact etiology unknown), eight; toxic, five; hysteria, five; lues of the central nervous system, four; meningitis (nonluetic), two; scar from hemiplegia, two; hemorrhage (subdural), two; hypopituitarism, one; thyroid and ovarian dystrophy, one; encephalitis, one; meningoencephalitis, one; brain tumor, one; pathology after skull fracture, one, a total of fifty-seven. I doubt, however, that many of the socalled causes are alone sufficient to produce convulsions.

Recognized causes of epileptiform convulsions have been gathered from the literature and classified as follows:

General cerebral pathology	*Local cerebral pathology*	*Toxemia*
1. Concussion	1. Abscess	1. Arsenic
2. Encephalitis	2. Arteriosclerosis	2. Carbon Monoxide
3. Idiocy	3. Hemorrhage	3. Diabetes
4. Insolation	4. Hydrocephalus	4. Eclampsia
5. Lues (interstitial)	5. Meningitis	5. Influenza
6. Multiple sclerosis	6. Softening	6. Rabies
7. Myoclonus	7. Traumas	7. Rheumatism
8. Paresis	8. Tumors	8. Strychnine
		9. Syphilis
		10. Thyrotoxicosis
		11. Uremia

Functional	*Endocrine*
1. Compulsion neurosis	1. Hypopituitarism
2. Dementia Precox	2. Thymus diseases and extirpation
3. Hysteria	3. Parathyroid diseases and extirpation

Cardiovascular	*Border Line*	*Experimental*
1. Adams-Stokes syndrome	1. Affect epilepsies of Bratz	1. Cortical stimulation
	2. Migraine	2. Decerebration
	3. Narcolepsy	3. Toxemia
	4. Vagal and vasovagal attacks	

HEREDITARY TAINT

The factors considered influential in heredity are: Insanity, epilepsy, hysteria, psychoneuroses, migraine, alcoholism and socalled extreme nervousness. All such cases have consequently been eliminated in choosing the control series. Whether or not all these could be influential need not be discussed here since the same factors have been considered in the control cases. (Table 1.)

All symptomatic cases in which less than five of a type were known have not been entered as so small a series would be of no value.

Since hereditary taint was present in only 10.5 per cent. of the non-neurotic series and was considerably greater in the others, it is evident that heredity is a factor of importance. The striking fact is that apparently all patients in whom epileptiform convulsions develop regardless of the presence of adequate pathology show a marked hereditary factor.

AGE

In 204 cases the age at the time of the first convulsion was known. These have been grouped into

five year intervals for purposes of study and the curve drawn. (See Fig. 1.) It will be seen that regardless of etiology there are three peaks—at twenty, at thirty to thirty-five, and at fifty. This curve seems extremely difficult to explain. Are we to account for the three peaks, or are we to explain the low points at twenty-five, forty to forty-five, and at the end? Assuming that the first rise is due to the strain of adolescence and the third to degenerative processes of advancing years, an effort has been made to explain the second rise by a study of sex, constipation, basal metabolism, blood pressure and heredity. We find 73.5 per cent. of this group to be with males as compared to 60.2 per cent. in the entire idiopathic series. We find 87.2 per cent. are constipated as compared with 87.2 per cent. constipated in all idiopathic cases and 66.3 per cent. in controls. We find average basal metabolism to be —10.4 as compared with —10 in all idiopathics. Blood pressure average is 115, in all idiopathics 116. Hereditary factor is 32.4 per cent., as compared with 40.6 per cent. in idiopathics. This leaves us with just one factor to explain the rise—male sex. A study of the sex question shows that the male preponderance is partly explained in the symptomatic series by alcoholism, syphilis, and other causes, but the distinct rise in the idiopathic curve between twenty-five and thirty-five is not explained. The very slight influence of arteriosclerosis is shown graphically (dotted line). It is seen to account for a certain small group only and these with one exception after the age of fifty.

SEX

In the idiopathic series 60.2 per cent. were males and 39.8 per cent. females. In the entire series 65.7 per cent. were males and 34.3 per cent. females. This is in fair agreement with figures of others.

CONSTIPATION

The influence of constipation is shown in Table 2. It is very evident that the females preponderate in constipation. Since the males have the preponderance in epilepsy, the question arises whether constipation is of much importance in the etiology of epilepsy. The totals will answer this question. In the symptomatic cases there is an incidence of constipation of twelve per cent. and in the idiopathic cases of twenty-one per cent. greater than in the non-neurotic series. In addition to this, it is well known that acute constipation occurs in an epileptic at the time of an attack.

BASAL METABOLISM (AUB-DUBOIS METHOD)

This had been determined in fourteen cases of the idiopathic series, and in only four of the symptomatic cases. The average for the idiopathics was —10, for the symptomatics —8.5, while the average normal by this method is about —4. There is apparently a slight but definite decrease in basal metabolism in cases of epileptiform convulsions, but the series is too small to do more than suggest.

BLOOD SUGAR

The blood sugar had been determined in fifty-four cases of so-called idiopathic epilepsy and the average was 97 mg. per one hundred c.c. of blood. The normal varies from 90 to 110.

BLOOD PRESSURE

To facilitate the study of blood pressure as a factor, Table 3 has been prepared. A study of the table reveals that while the average blood pressure in the arteriosclerotic cases was 16.5 points higher than in the controls, the average age at examination was 12.8 years higher. This, making allowance for difference in ages, would indicate that the blood pressure was but slightly higher in the arteriosclerotic cases. Similarly allowing an age compensation in making other comparisons, the question of blood pressure alone seems of little moment.

HEMOGLOBIN

A study of the hemoglobin gives negative results as the idiopathic, symptomatic and normal cases all had hemoglobin content between 85 per cent. and 86 per cent. Although the variations of hemoglobin percentage with age have been carefully worked out in the laboratory of this institution and are available, the age differences were so slight that this point is negligible.

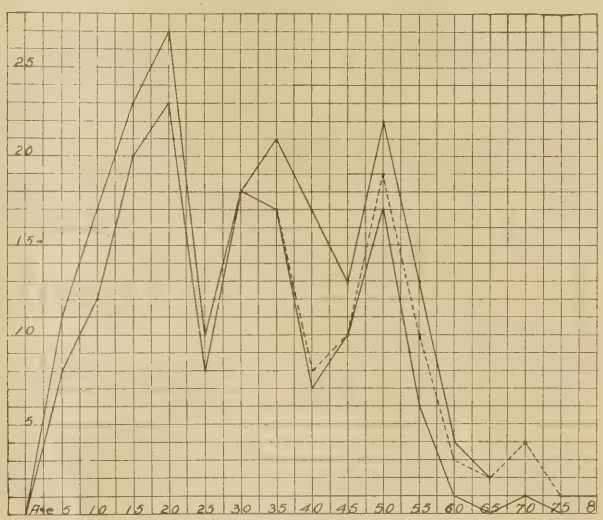

FIG. 1.—Chart showing age incidence of first convulsion. Upper solid line = Total number of cases in which age at first convulsion was known. Lower solid line = Idiopathic cases. Dotted line = Arteriosclerotic plus idiopathic cases.

ASSOCIATION WITH MIGRAINE

The coexistence of epilepsy and migraine has been frequently pointed out. In this series there was an incidence of eighteen in 157 cases, or 11.9 per cent.

DIFFERENTIAL BLOOD COUNT

This had been done in forty-seven cases. The following are the average results: Small lymphocytes 23.27, polymorphonuclears 70.42, large lymphocytes 4.23, eosinophiles 1.7, transitionals .23, mast cells .15, a total of 100 per cent. These are all within normal limits and the point apparently drops out of consideration.

FINDINGS IN X RAY OF HEAD

It has frequently been noted that pathology in the region of the sella occurs in some cases of so-called epilepsy. In the idiopathic series the results were as follows: Small sella, 3 = 6.12 per cent.; thick posterior clinoid process, 6 = 12.25 per cent.; both, 10 = 20.4 per cent; neither, 30 = 61.2 per cent. This means that the finding of a small sella, thick-

ened posterior clinoid processes or both occurs in about 39 per cent. of idiopathic epilepsy in this series. In twenty-nine of the symptomatic cases there were eight of such instances or 27.6 per cent.

There is a group of cases in which a factor was present which might have been etiological but the relation of cause and effect was not close enough to justify that conclusion. The convulsions in these began as follows: With influenza two, after eclampsia (several years) two, after alcoholic debauch two, after long severe labor (mother the patient) two, in presence of intestinal worms, ceased for years after ridding of parasite, but returned two, in presence of old skull fracture one, after electrical shock one, after rattlesnake bite one. But there are the following interesting features: One patient, after having had convulsions for years, was treated with rattlesnake venom and reported marked improvement. One of the so-called worm cases was that of a man of fifty-seven who "had never had epilepsy before." He had one convulsion a month until sixty-one, was then treated with medicine which rid him of the worms and he did not have another convulsion for twelve years. He then developed spells of epileptic automatism and marked mental deterioration. Further, the hereditary taint in this group independently was 57.2 per cent. Were they idiopathic or symptomatic cases?

SUMMARY

1. A series of 210 cases of epileptiform convulsions has been studied with a view of determining etiological factors. All points not comparable with recognized normal standards have been carefully compared with a series of two hundred consecutive nonneurotic cases.

2. No age is exempt. The curve of age incidence of the first convulsion shows three peaks, twenty, thirty to thirty-five, and fifty. The curve of symptomatic convulsion cases runs remarkably parallel to those of the idiopathic types.

3. Male sex predominates in the proportion of sixty to forty in idiopathic cases and sixty-six to thirty-four in the symptomatic. The latter is apparently due to the greater incidence of arteriosclerosis, toxemias, etc. in males.

4. Constipation is a marked predisposing as well as exciting factor or else epilepsy produces constipation.

5. The basal metabolism in this short series is somewhat lower in epileptics than normal.

6. Migraine headaches coexist with epilepsy in about 12 per cent. of cases.

7. The finding of a small sella, thickened posterior clinoid processes or both occurs in about thirty-nine per cent. of cases of idiopathic convulsions and in about twenty-eight per cent. of symptomatic convulsion cases.

8. Blood sugar, blood pressure, hemoglobin content, and differential blood count do not vary from the normal cases in epileptiform convulsions.

9. Since the symptomatic cases show an age curve similar to that of the idiopathies hereditary taint, constipation, sella turcica pathology and possibly lowered basal metabolism, nearly as great as that shown by the idiopathics, it would appear that the symptomatics are potential epileptics "waiting for" an exciting cause. If this be the case, the "cause" of a symptomatic convulsion is merely the exciting factor in the case.

Table 1. Hereditary taint in the various groups

Type	+	*Total*[1]	*Per cent.*
Arteriosclerotic	4	14	28.6
Intracranial pressure	5	8	62.5
Jacksonian epilepsy	2	8	25.0
Toxic	3	5	60.0
Hysteria	1	5	20.0
Total symptomatic	18	56	32.2
Idiopathic cases	58	143	40.6
Controls (Nonneurotics)	18	172	10.5

+ = Hereditary taint present in ancestors.
[1] Total cases in which factor was known.

Table 2. The incidence of constipation in the various groups, both sexes

	Idiopathics	*Symptomatics*	*Nonneurotics*
Males	85.6	75.	58.
Females	89.7	90.	74.6
Totals	87.2	78.3	66.3

Table 3. Age-blood pressure table to show the influence of blood pressure in the production of symptomatic epilepsies

	Cases of known blood pressure	*Average blood pressure when seen*	*Average age*	*Cases of known age*
Idiopathics	134	116.	34.2	153
Arteriosclerotic	12	147.5	60.3	15
Symptomatic	46	134.5	41.2	57
Controls	193	129.	47.5	200
Total Eps.	180	121.2	36.	210

Epilepsy as a Type of Heredofamilial Degeneration or Abiotrophy

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Turner says of epilepsy that it is as obscure now as when the lines of Lucretius' verse were penned centuries ago. Whether Turner's statement is literally true is a matter of opinion but certainly we are far from having a clear idea of the nature of epilepsy. The generally accepted facts of epilepsy seem to be chiefly of a negative nature; we at least know some of the things epilepsy is not. For instance, it does not appear to be an infection local in the brain or elsewhere or general; it is not a toxic condition; it is not psychogenic.

On the positive side there is the indubitable influence of hereditary tendency. This is evident in a percentage of cases sufficient to be conclusive it would seem in view of the limitiations of family histories and the percentage of cases in which other hereditary traits become manifest. That it is not convincing to many is inexplicable and may be an-

other instance of the common psychological phenomenon of overlooking the obvious, the unpleasant obvious.

If a conjecture may be hazarded as to one reason for the hesitancy in accepting the hereditary influence as final, it would be that the connection between an acquired illness and a congenital defect is not clear at a glance. One naturally looks for causes active near the time of onset. As possibly causal factors active at this time can frequently be found, such as overwook, an infection of some sort and so forth, there is little incentive to question their validity and to examine remote factors whose relation cannot be definitely established.

Nevertheless the fact remains that in weight and frequency inheritance overtops all other factors that have been mentioned. Such being the case, it is worth while to attempt to render relationships clearer by considering the mechanism by which the innate weakness may work to give rise to epilepsy some years after birth. What happens, for example, in the interim before the onset of attacks to transform the latent weakness into an active disease?

HEREDITARY DEGENERATION

The value of analogy in clarifying the nature of epilepsy has been consistently overlooked. It is obvious that if conditions of similar nature be examined together all will be better understood than if they are studied separately. And *a priori* the likelihood that the pathological process of epilepsy has analogies is very great. Of course there must be care and hesitancy in the selection of analogies and certainly there is greater safety in conclusions the larger the number upon which they are based.

The conditions which most closely resemble epilepsy are clearly the heredofamilial degenerations or abiotrophies. These generally show the influence of heredity, they are acquired, progressively increase in severity, and are organic in nature. Moreover, they are numerous and are particularly likely to affect the nervous system. No other type of pathological process than that here active so closely conforms to the accepted facts about epilepsy.

Here are a few of these abiotic degenerations: The progressive muscular atrophies and dystrophies, Friedreich's ataxia, paralysis agitans, Huntington's chorea, myoclonus, progressive cerebral diplegia, hereditary optic atrophy.

Upon examination of these conditions we find that pathologically there is a parenchymatous degeneration of cells and fibres of which no other cause appears than inborn weakness. The process is not always microscopically evident but its organic nature can rarely be doubted and where absent can be subsumed by analogy. The inability to find the changes under the microscope is easily explained; for instance, the degenerated cells and fibres may be so scattered that their loss is not detectable. In each of the conditions a particular set of cells and fibres is involved, the functions of these different sets determining the symptoms of the respective condition.

EPILEPSY AS AN ABIOTROPHY

In epilepsy, the chief function involved may be considered extra pyramidal motor in type. This motor feature can be plausibly regarded as in series with the tremor, the chorea, the athetosis, the incoordination and the hypertonus found in various of the other abiotic conditions. A defect permitting convulsions would not be different in principle from one resulting in chorea, athetosis and other extra pyramidal disturbances.

With the psychic features, consisting of the general deterioration and the tendency to the other well known deviations found in epilepsy, we have to compare the psychic features of Friedreich's ataxia, of cerebral diplegia, of myoclonus, of Huntington's chorea and even dementia precox itself. The type of psychic disturbance, like the type of motor disturbance, depends on the structures that happen to be involved in the degeneration. Whether the same structures are concerned in both motor and psychic disturbances cannot be stated.

Huntington's chorea is a particularly instructive analogy. Indeed it is the key condition which might have been divinely furnished to show us the way to understanding all the other conditions of this nature. The chorea is sufficient evidence of an organic process, of which the etiology is clear in the strong hereditary tendency. The organic nature of the mental changes is shown by the fact that they are associated with the chorea. Having Huntington's chorea in mind we can understand the motor and psychic aspects of epilepsy and also, for that matter, the psychic features of the true psychoses.

To return to heredity, there are undoubtedly aspects which are not yet clear. In the first place some of our conditions (for instance, progressive muscular atrophy) rarely give histories of familial occurrence and in line with these are the instances of the others when the closest investigation also is negative in this respect. Again the widespread occurrence among the races of the earth is against a purely hereditary origin and in favor of the frequent origin *de novo*. But whatever other process may be active, it clearly must be consonant with heredity. In this relation processes which may be considered are 1, the long remaining of a defective trait in latent state; 2, the transmission of certain acquired traits, and 3, the tendency of traits to become linked to functions (as occurs with the sex linked traits) and perhaps sometimes in transmission to jump from one function to another. Of course processes may be at work of which we now have no conception; but in any case we may be sure heredity has a part.

The foregoing observations are of course purely speculative. Nor in the present state of medical knowledge does there seem to be any way of verifying assumptions by direct observation. For instance in the matter of structural changes, no one can doubt that any amount of application of available staining or chemical methods will fail to disprove or confirm the organic nature of epilepsy. Still the value of the method of comparative study is clear, so clear that it is difficult to understand why it has been neglected.

SUMMARY

1. The contention is advanced that a great deal may be learned about epilepsy by considering it in relation to other nervous affections that seem to be of similar nature.

2. The affections most similar to epilepsy appear to be the heredofamilial degenerations or abiotro-

phies, examples of which are the muscular atrophies and dystrophies, paralysis agitans, Huntington's chorea, progressive cerebral diplegia, myoclonus, dementia precox, and other conditions.

3. In these conditions the pathological process is a degeneration of cells and fibres which arises from inborn weakness. In each condition a characteristic set of cells and fibres is involved.

4. In epilepsy the convulsions are assumed to be representative of a type of extrapyramidal motor involvement and to be in series with tremor, chorea, athetosis and incoordination which are types of extrapyramidal disturbance found in others of the group of abiotrophies.

5. The mental aspects of epilepsy are similarly considered to be comparable to the mental disturbances found in Huntington's chorea, cerebral diplegia and dementia precox.

6. The fundamental causative influence is heredity although other processes may act in conjunction with heredity as we now understand it.

Humboldt Building.

Anxiety Neuroses and Allied Conditions

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No subject has occupied the attention of the psychiatrists to a greater extent in the last ten years than the study of borderland cases of psychoses such as the phobias, compulsions and anxiety states, and such cases while not always referred to a psychiatrist usually are for the reason that the general physician has not the patience nor the inclination to work along such lines.

Most physicians are able to distinguish the difference between neurasthenia and hysteria and to them there is practically no other psychoneurosis which is worthy of the name. If we accept neurasthenia in its narrowest sense it means nerve exhaustion and carries with it no ideas of fear, reference or obsession, but is a physical condition accompanied by various physical pains referable to the heart and digestive system associated with nervousness in the lay sense and insomnia, together with pressure headaches and carries no psychic manifestations other than the thought of extreme exhaustion. As neurasthenia is not to be considered in this discussion other than from a viewpoint of differential diagnosis I will leave that subject and look at the question of hysteria.

HYSTERIA

Hysteria was first described as a condition of nervous apprehension with certain physical manifestations causing paroxysms, certain degrees of unconsciousness with loss of memory and often associated with sensory disturbances and muscular contractions and usually was associated with some question of the individual trying to create a scene in order to gain sympathy. Freud exploded these doctrines and proved that hysteria was a psychogenic disease caused by fear, apprehension and remorse over sexual indiscretions or the thought of ever having been guilty of thinking of committing certain sexual irregularities; and it is the consensus of opinion today that hysteria is a psychogenic disease showing such physical signs and symptoms as before outlined. There is no doubt in the minds of psychopathologists today regarding the etiology of hysteria and all of the best authorities conform to the Freudian principles with slight variations. All are agreed that the sexual factor is the biggest and most important and in the majority of cases the agitator of the attack. We cannot eliminate certain inferiority complexes which engender a weakened resistance to mental conflict and thereby lower the threshold for future resistances in such a way that the patient becomes a mental coward.

These two conditions at one time were considered the only nervous manifestations to which the human was subject, but in the past ten years a wide field of investigation has opened up and our modern psychologists have separated and classified many milder psychic conditions which in some ways are allied to hysteria and in other ways are allied to neurasthenia. If we look at neurasthenia as the alpha of nervous conditions we may then consider hysteria as the omega of these conditions and that between the alpha and the omega are all of the various degrees and variations of psychoneuroses.

With this slight discussion of the two extremes of the psychoneuroses we are now better prepared to look into the anxiety conditions.

ANXIETY

Anxiety is a state of mind and is not a temporary but a continuous state of mind brought on by the emotion of fear. Christian Larson, one of our greatest psychologists, has made this statement, that fear is the basis of ninety per cent. of human ills. Whether this is true or an exaggeration of actual fact does not concern us but coming from such an authority would lead us to believe that it is somewhere near the truth even though expressed as hyperbole. That emotions are the basis of many of our diseases cannot be gainsaid when such authorities as Cannon, Langdon Brown and others have proven for all time the effect of fear, pain and hunger upon the animal mechanism and shown such influences on the internal secretions and the digestive fluids. If by emotions we can demonstrate in a few seconds anger with flushed face and contracted brow, and experience from this loss of appetite, headache and other somatic disturbance of either long or short duration, when we have the constant examples of people dying from fright or from joy, which is only momentary in its impression, when we have other and further examples of hair turning grey over night as is recorded by Hack Tuke in his book on *Mind and Body;* is there any reason then by which

we can further doubt that the emotions may cause serious somatic disturbance?

THE EMOTIONS

In order to cause a physical manifestation there must be a mental impression. If the emotions are the cause of these disturbances, they, being a product of the mind must affect the sphere of activity known as mental reaction. From such a discussion as we have been following there is but one conclusion to reach and that is that fear, being one of the emotions of every individual, engendered in life through prehistoric agencies from the eons of time, it must naturally be among the most primitive of all emotions. We fear the unknown or that which we do not understand, hence the reason for fear in childhood. If our education is neglected along sex lines from misinterpretation, prudery or any other cause, that libido being one of the most ancient of all emotions or trends, makes it easy for a psychologist to appreciate how sexual thoughts, whether brought to a culmination in an act or brooded over as thoughts only can cause a state of fear regarding consequences. The moment the cry for companionship, which is but a step to the sexual, as all modernists believe, is felt in the organism, there is a tension produced which must be relieved. Having been educated to believe that all thought of sex is wicked and that one who thinks in that direction is thinking sinful thoughts and realizing how inadequately they are prepared by biological determinism to resist this cry of the libido makes our young people apprehensive.

INCIDENCE AMONG SEXES

This will explain why it is that women are the most likely victims of anxiety neurosis, for women through their early education and home environment up to the present age have been denied that knowledge of sex to which they are rightly entitled and have been taught to suppress all thought of such matters as immodest. Knowing their actual and innate urgent desires in these matters they begin to realize the sexual conflict and many women are never wholly able to overcome or sublimate these desires to such an extent that they enjoy physical comfort. This is not so with men, because from earliest infancy from biological necessity men are constantly educated along sex lines, are never greatly restrained in their sexual desires and few men ever pass the age of puberty without having sexual experiences and relief from sexual tensions. Those who are unfortunate enough to be brought up in the wrong environment and who by such environment have become timid and retiring in disposition as the result are just as subject to the anxiety neuroses as are women who have been taught to suppress these physical tensions.

THE ELEMENT OF FEAR

To say that fear is always the result of a lack of knowledge of proper libido would be narrowing our topic and despite the Freudian theory we cannot accept it as final as the cause of anxiety neurosis, but we must be prepared to accept the fact that perhaps ninety per cent. of the anxiety neuroses are the result of disturbances of sex life.

Hecker, I believe, was the first man definitely to isolate and name this disease known as anxiety neurosis, and due to his long continued study of neurasthenia he was inclined to believe that it was an offshoot from a neurasthenic temperament, however, modern psychologists can no longer accept this as being true and Stekel of Vienna, a former student of Freud, accepts the fact that beside this condition each of the various psychoneuroses may show a relative amount of fear and a relative amount of sexual indiscretion. Through individualistic psychology we now find that the psychoneurosis may manifest as anxieties, phobias, obsessions, ideas of reference and amnesias, passing on through to complete unconsciousness. To come back to anxiety neuroses we must be prepared to accept the dictum of Ben Williams, who says that anxiety is nothing more than constant fear. Perhaps one fear, perhaps many fears started our neurosis. There is no doubt with the majority of cases the thing that started our fear was some inconsequential childhood impression with the lack of understanding that follows ignorance. If we do not succeed in recognizing and removing such fear thoughts, other associated thoughts ingraft themselves upon the original and we have a fear complex. Several fear complexes accumulating at different strenuous periods in life when we cannot adequately meet our conflicts produce that constant state of fear known as anxiety.

THE SEXUAL ELEMENT

In all of my individual experience with this type of neurosis I have never failed to find in an adult suffering from such a condition a sex element and in most cases the cause has been sexual tension from the lack of sexual gratification, started by deliberate intention, forced abstinence or psychic incompatibility. Symptoms of this condition may vary, they may carry with them many physical manifestations and to such an extent that the novice in psychology or a general practitioner may make the mistake of diagnosing the trouble as neurasthenia. One of the most common complaints in this type of patient is the feeling of tension in various organs, sometimes it is the urinary organs, sometimes constrictions about the chest, in others palpitations and arrhythmias and tachycardia. Very seldom in these cases do we find digestive disturbances, however, there is always some evidence of constipation. It is not difficult to understand these tensions once we appreciate the fact that the individual is suffering from continuous fear. We know that fear dries up secretions, we know that it produces apprehensiveness and when one is apprehensive it is not difficult to understand that there will be an acceleration in the heart beat. The somatic symptoms are always found in neurasthenia; the symptoms we do not find in neurasthenia are such as a fear of death, a fear of being left alone, a fear that the family will starve, a fear of imminent danger, a fear of suicide, and these are always present in the anxiety neuroses and are responsible for the name given the condition. If one is constantly apprehensive, constantly looking into the unknown for something which does not occur, living in mortal dread of imaginary consequences, how is it possible to be

able to sleep? Of all diseases which create sleeplessness there is none which is more decisive than that of the anxiety neurosis. It might be said that if you have not insomnia the case is not an anxiety neurosis, the very nature of the condition with its constant mental stress cannot help but induce sleeplessness. Where fears abound dreams of a disturbing nature are constantly present and in the anxiety neurosis they always have the sexual element either frankly presented or in a symbolic manner. As the sex life is the strongest contributary element in the condition we have a vicious circle which is hard to combat and one of the most stubborn of all types of psychoneurosis is that of the anxiety type. Had it not been for psychoanalysis perhaps we would never have recognized this condition as an individual and isolated state, but we extend thanks to Dr. Freud for this knowledge which has enabled us to segregate and classify this type of psychoneurosis and to give almost as definite an etiology to it as we would give to the cause of pneumonia.

As this paper can only deal briefly with any one of the phases of neurosis it would be very difficult to discuss even in a limited way such other conditions as obsessions, compulsions, transference and fixation hysteria, suffice it to say, however, that any one of these conditions may be easily taken for an anxiety neurosis and it requires great acumen, neurological skill and close observation before it is possible to make a differential diagnosis of these conditions. One of the greatest factors in these types allied to the anxiety neurosis is that they carry very little physical suffering and show very few evidences of lowered bodily resistance or insomnia, while in the anxiety neurosis these are most often the dominating symptoms.

CHANGES IN REACTION TYPES

It would not make this discussion complete without considering some of the after effects of these earliest types previously discussed. Compulsions may easily lead into hysteria, hysteria into psycholothemia and psychlothemia into a frank manic depressive insanity. Many of these psychoses were originally compulsions. Obsessions of all types while not disturbing the somatic mechanism are most likely to develop into paranoid trends with ideas of reference and persecution. Many of the pure anxiety types have been known to develop into melancholia with suicidal tendencies. This little diversion is brought up at this point in order to emphasize the fact that early recognition together with proper psychological and reeducational treatment will go a long way toward keeping numerous cases of this kind from developing into psychopaths and institutional cases. Mental hygiene, while very new, is the answer to the final solution of—What shall we do with these cases?

TREATMENT

Coming back to the question of treatment we have had various experiences with these cases and have learned beyond all cavil that medical and surgical interference has proven to be more detrimental than beneficial. We have learned that drugs and glandular therapy are only palliative measures and cannot be of any assistance in any psychoneurosis of long standing. No long continued insomnia has ever been reached through medicinal means, narcotics and soporifics have proved inefficacious in every single instance that I can recall. It is a far cry from drugs to psychology, but we must concede to the psychologist that he alone has been able to reach these conditions successfully. There are many methods of approach for treatment, such as the persuasion method of DuBois, the reeducational method of Morton Prince, the active analytic methods of various psychologists and all have given a relative degree of success, but it remained for Sigmund Freud and one of his older students, William Stekel, to demonstrate beyond all question of doubt that the most rapid method of approach as well as the most lasting result was only through psychoanalysis.

PSYCHOANALYSIS

It has been my pleasure to have proved to my own satisfaction that psychoanalysis is the specific for the removal of fears of every description as well as obsessions and compulsions and it has further been my experience that no method other than this as tried by myself has given permanent result. In a previous paper of mine on Epilepsy which was published in the *North West Medical Journal,* I called attention to the fact that psychoanalysis was constantly changing its procedure and that the technic was becoming ever more perfected. Even Freud himself made the statement that he was sure that psychoanalysis was in its infancy and his own pupil, Dr. Stekel, as well as Dr. Otto Rank, have proved that by a more perfected technic they can even reach cases of the milder psychoses. If through these means we can reach the nucleus complex and adjust conflicts which are the basis of psychoneuroses as well as of psychoses, is it any wonder that we have succeeded in curing ninety per cent. of the psychoneuroses which are only the determinants of psychoses if allowed to go untreated.

SUMMARY

First. Anxiety neuroses, phobias, obsessions, compulsions and transference hysterias all have a closely related etiology and most of them have their origin in sexual indiscretions and dissatisfactions.

Second. These conditions must be distinguished from hysterias at the one end and neurasthenia at the other end as having been intermediary processes between the two conditions.

Third. The symptom complexes of these conditions are practically the same with but slight changes in mental reaction and run the gamut from the physical, through the sensory into the mental.

Fourth. They must be definitely classified as distinct entities differing radically from both hysteria and neurasthenia, although having symptom complexes, some of which are common to both conditions.

Fifth. The rational method of handling these conditions is in a sense prophylactic rather than curative and to my mind this is the largest and most promising field of mental medicine.

Sixth. The treatment for all these conditions is the same and produces permanent results provided the nucleus complex is reached and the patient continues until dream processes show no longer sexual content.

Teaching Mental Hygiene to Medical Students and Practitioners

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An adequate conception of mental hygiene requires special preparation even beyond that of the medical curriculum. It was found during the great war that the chief handicap of the physicians assuming duty in neurological service was inadequate knowledge of the physiology of the nervous system, which requires for its understanding a better knowledge of its anatomy than is usual. The persons associated with the mental hygiene movement are too often deficient in this respect.

The best sanitarians have had an intensive bacteriological training, and all have a wide and deep knowledge of the natural history of infection, and most of them of immunity as well. Without this public health would not be so well safeguarded. We have as much right to expect a similar fundamental knowledge from those who undertake and conserve the mental health.

It is the absence of this knowledge on the part of the profession at large which has permitted the efflorescence of such vagaries of mental hygiene as Christian Science.

Adherence to the doctrine of Christian Science has caused obstruction to sanitary measures required for public health. The pernicious doctrine which animated the obstructionists was not refuted by the physician and other citizens who wished to adapt proper sanitary measures, because they are not versed in the fundamental facts of psychology requisite to refute the fallacies of cultists.

The same is true of suggestionism. The visit of its most recent advocate to America raised a wave of enthusiasm which was seldom quenched by a realization that that kind of suggestive therapeutics not only was dangerous because conducive to delay of adequate diagnosis in dangerous conditions, but that all kinds of suggestion had disadvantages which far outweigh the apparent and often spectacular removal of symptoms, which is so easy by that means to a skillful operator.

The unhappiness and even loss of life and moral decadence caused to the illadvised victims of lopsided theories of psychopathology has been observed by most discerning physicians. It is only one more example of the absurdities which have occurred throughout history in this sphere of what is known as psychology. From the incantations of ancient and medieval times to their pseudoscientific applications according to the theory of Mesmer through the esoterism attributed to the hypnotists, up to the absurdities just mentioned of our own day and generation.

To destroy these noxious germs the student of mental hygiene then must be prepared: First, by a clear conception of the physiology of sensation and perception and of the falsification of these caused by trauma, infections, intoxications, chemical perversion or other bodily disease.

This can be given in the medical school as at present equipped but only provided the knowledge is coordinated and applied specifically and orientated towards the conservation of mental health.

Just as a critical attitude in medicine is developed by exact work with physiological apparatus, so the present tendency to uncritical acceptance of unscientific pseudopsychology so rampant today even in the profession can be counteracted by a training in the psychological laboratory, when that is properly orientated towards showing the student how ill-founded are many of his ideas not only about the behavior of others but even about himself: Even the simple ascertaining of the true reaction time bristles with fallacies, the study of attention shows the student how easily it lapses and shows the class its differences among individuals, and when one reaches the most difficult study of all, that of introspection, which is the chief avenue to the mind of patients, a whole world of difficulties is opened up, the learning to cope with which, however, is one of the essentials of a good psychiatrist. A proper laboratory course then teaches the student to avoid the easygoing generalizations which pass current among the uncritical.

Furthermore the further study required for an adequate grasp of psychological processes is rarely given even in the depatment of neurology and psychiatry. The reason for that is that the concern of the holders of those chairs is usually with the grosser types of disease such as come to the hospital and madhouse. Only recently have they begun to be interested in the processes which lead to the gross deviation of conduct called by the laity insanity. The departition and selection of types of disease under labels has preoccupied them too much.

The tendency to lean upon authority instead of thinking for oneself, an infantile characteristic, is supposed to be bred out of one during a scientific training, which that of a medical student is supposed to be; but alas! the investigation spirit is the exception even among doctors, in spite of the innumerable incentives thereto which their work showers upon them, particularly in psychiatry.

Against this fatal tendency the student of mental hygiene must be assiduously guarded by the teachers by their avoidance of the assumption of infallibility. This is best secured by means of an abstention from the didactic method, by the giving to the students of the explicit objective to understand mental processes through the avoidance in their earlier studies of searching for type diagnoses, or to give textbook names to the diseases of patients.

The best way to attain these aims is by allowing the student to work with patients before he has read or heard descriptions of mental disease. This should be an analytic exercise with no pretensions to completeness, but with a single objective, i. e., the search for a particular abnormality by the patient, e. g., a peculiar motivation, or an unusual state of feeling, or an intellectual defect, or an unsocial tendency, as the case may be. These elementary

exercises should be pursued until the student develops an exploratory technique and an attitude of interest in the study of the mental processes of his patients.

The second step in education of the student should again be undertaken upon patients. In the grouping together of findings of the foregoing kinds into the more complex mental attitudes and affective states.

Only after this has become a habitual clinical method should the use of the conventional nosologies be introduced as a final step in preliminary psychiatric training.

The student is now furnished with the rudiments of the understanding of mechanisms and habit of thought which compels him to seek them.

By knowing how diseases develop, he has the first requisite for stopping their development. Whereas formerly he could only stop disease by destroying its bearer, just as a person ignorant of photography could only arrest the development of a photograph by wiping it off the plate, while one who understood the chemical process could modify its development in any way without destroying the photograph.

After understanding psychopathological processes through the study of patients, the student will begin to study the sociological factors which contribute to mental disturbance in various ages and conditions such as in infancy, childhood, adolescence, youth, marriage and in the various industries and occupations of life.

In clinical study some understanding is gained by the inspection of an incompetent mitral valve, an acute nephritic kidney, an advanced cirrhosis of the liver or a sclerosed spinal cord; but the physician who stopped here would be a poor diagnostician except of advanced cases without hope. The really useful physician is he who could diagnose these conditions in their incipiency, to do which he would have to understand far more than the morbid anatomy of the ultimate process.

This is just as true of mental disease. An advanced dementia in the asylum, or the last stage of paranoia, extreme melancholia, or acute mania is comparable to dead house material and poorly adapted to instruct the student of processes. Disease does not begin in a hospital, so to study its incipiency the dispensary must be frequented and the home visited. The laboratory of mental hygiene is the hospital dispensary. Few patients in any of these services fail to present some aspect of interest to mental hygiene. So the psychiatrist in charge should be in the closest cooperation with the directors of the other services as the most fruitful clinical material may come from the most unexpected sources.

For example: A complaint of blindness may be due to the motivation of a desire for sympathy, ophthalmological service. Impotence may be the fruit of phobia, or sense of superiority. Aphasia may be assimilation of shame. A pain in the back or limping may be a reaction to painful circumstances. Vomiting may be the manifestation of a disgust complex. Tachycardia may be the fruit of emotion. The medical service is full of examples of psychopathological signs with physical symptoms which are problems of mental hygiene.

To graduates, the difficulty in teaching mental hygiene is that what we may call the functional point of view is so often beyond their ken. The operating room and the dead house have trained them to think more statically than dynamically. This obstacle, however, has already been overcome in clinical medicine by the study of body chemistry. To overcome it in psychiatry the analytic study of patients is the best preparation; but they must be patients in formative stage at least (dynamic) and their motivations and feelings should not be too remote from those of the healthy individual, for the earlier studies at least. Not the dramatic and astonishing, but the simple and usual is the suitable paradigm for the instruction of the beginner.

When the concept of psychogenesis has been thoroughly grasped and put into clinical practice there exists a real danger both in the case of students and graduates that to the psyche will be attributed disorders of quite other origin.

This failure to detect physical origins is of course the dominant vice of the psychic cultist or others who attempt to treat the sick without the adequate preparation of medical training. It can only be counteracted by the clinical knowledge which is gained in dealing with patients by the method of intensive study during the preparatory period. Not the number of cases seen, but the thoroughness with which each is studied is the maker of clinical power.

Hence abundance of patients in the teaching of mental hygiene by means of psychiatry is a drawback rather than an advantage, unless there is a staff large enough and accomplished enough to deal with large numbers. Thus no hospital clinic need be too small to furnish examples sufficient for a class of students, as each patient may afford material for study for weeks, especially if the social and industrial relationships of the patient are included in the study, as they should be.

There should hence be a close and intimate connection between the mental hygiene clinic and the social service department of the hospital when there is one, and if one does not exist the mental hygiene clinic would become in effect a social service if it is adequately conducted.

SUMMARY

The teaching of mental hygiene requires:

1. Adequate knowledge of the physiology of the nervous system, presupposing its anatomy.

2. An adequate knowledge of dynamic functional psychology.

3. The clinical study of these upon the elementary processes on patient to the exclusion at first of their synthesis into the current appellations of mental disease which is most satisfactorily performed in the dispensary and hospital in preference to the asylum for the insane.

4. The study of these processes from a social point of view in home, school and workshop.

5. The knowledge of the dead house types seen in the asylum.

Practical Therapeutics

SOME USES OF INSULIN

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Insulin was at first intended only for the treatment of diabetes. Already it is used by some for the treatment of tuberculosis, acidosis and hyperthyroidism, and good results have been asserted. It is the purpose of this paper to call attention to other possible uses. From the beginning of the practice of the healing art, it has been the custom to inspect the patient's tongue, in order to judge by its appearance, especially the coating, as to the condition of the stomach, and the severity of the disease. It has also been the custom to give medicine to make the bowels move more. Usually this was done as a matter of routine. One of the objects of this treatment is to keep the digestive organs in better condition. Most physicians believe in this procedure. The fact that these customs are practically universal shows their importance. When the bowels are moving well, the physician believes there is less danger of autointoxication, and when the tongue improves in appearance, he believes the digestive organs are functioning better, and usually, that the disease is improving.

If any other method of treatment could be found to put the digestive organs in better condition, it would be a valuable help to say the least. It would increase the resisting power of the patient, shorten more or less the period of illness and convalescence, to say nothing of the effect on the death rate. It is well known that insulin improves the appetite. It is reasonable to believe that this is evidence of better functioning by the stomach, and that the pancreas is not the only organ to be favorably affected. This raises the question as to whether other digestive organs are not also benefited. If this action of insulin can be obtained to any appreciable extent in acute diseases, and in chronic wasting diseases, then its field of favorable influence becomes very large, and it becomes a very important remedy aside from its use in diabetes. That this is so is indicated by the following cases.

Case I.—Male, aged three, pale, thin, one cervical gland enlarged to the size of a hazelnut, mother complained principally that he had a poor appetite for a very long time, received an injection of one third unit of insulin. A week later the father stated that the boy asked for something to eat a few minutes after the injection, and also said that he was hungry, something that he had not said for a long time, and that he continued to have a good appetite up to the time of the father's report.

Case II.—Male, aged twelve, acute rheumatic endocarditis, pericarditis, dilatation, râles all over both lungs posteriorly, 102° F., respiration 56, coated tongue, looked extremely sick; one unit of insulin daily. Improvement was slow but the tongue was noticeably less coated within two days and the appetite also improved quickly. It seemed that the insulin was an important factor in the general improvement.

Case III.—Male, aged forty-nine, chronic malaria, mild symptoms, those referred to the digestive tract becoming very annoying now and then. The latter were an uneasy sensation in the abdomen after meals, sometimes amounting to actual pain, and occasionally a slight nausea. One unit of insulin relieved these symptoms for about two days at a time.

It may prove to be of some value in malignant cases and those where the stomach rebels against quinine. This would also apply to other diseases and remedies which annoy the stomach.

Case IV.—Female, aged twenty-four, mild case of rheumatic fever, tongue coated, complained also of loss of appetite, received one unit of insulin daily. Although the slight elevation of temperature continued for more than three weeks, all the symptoms improved during this time, but the appetite and coating of the tongue improved much more promptly than the rest.

Cases V, VI, VII, and VIII.—Four patients with scarlet fever. All the children were given a fraction of a unit of insulin daily, and were taking food well before the temperature became normal.

Case IX.—Female, aged twenty-four, severe infection of throat with false nondiphtheritic membrane on both tonsils, temperature as high as 105° F. at beginning and lasting ten days, was given two thirds unit insulin daily, appetite returned on fifth day.

Case X.—Female, aged one, otitis, canal full of pus, teething, temperature 105.6° F., given one sixth unit insulin daily. After four days, all the symptoms were improved and the appetite was good, although the ear was still discharging freely, and the temperature was not quite normal.

Case XI.—Male, aged ten; pneumonia, coma, meningismus very severe, given two thirds unit insulin daily, good appetite on third day, temperature normal on fourth.

Case XII.—Premature baby, five weeks, four pounds, lost eight ounces in the last week, was put on formula in addition to breast, given insulin one eighth unit only once, gained ten ounces in four days. The weighing was done by an experienced nurse and the appearance of the baby's face was a strong corroboration of her figures. Insulin should be very useful in these cases, also in difficult feeding cases in full term babies. It may become popular in infant clinics.

Case XIII.—Female, aged sixty-six, lobar pneumonia, infected kidney, emaciated. It seemed well to warn the family that she was not likely to live more than a few days. She received by far the largest amount of insulin of all the cases, as much as five units a day when at her worst. Her family was surprised at her appetite, and she survived the crisis on the tenth day, although the temperature rose again immediately on account of the complications, and she still has fever on the thirty-second day at time of writing.

Case XIV.—Female, aged three, pertussis, received one sixth unit insulin daily at first, less often

later, did not lose her appetite as so many of these cases do.

Case XV.—Female, aged one, acute cervical adenitis, temperature 103° F., given one third unit insulin. Next day the temperature was normal, the glands of about the same size and the appetite had returned.

Case XVI.—Male, aged forty-five, severe diarrhea for ten days, temperature 99° F., stools were reduced from nine to four in twenty-four hours, and to normal in forty-eight.

Intestinal cases may become another excellent field for this treatment. It should be given a trial in cholera infantum, Asiatic cholera, yellow fever, typhoid, dysentery, colitis and other conditions, also in the vomiting of pregnancy and after operation. There are probably few conditions of the stomach and intestines in which it would not do some good.

In several cases of essential hypertension in which the improvement from treatment with sensitized colon vaccine seemed to have reached its limit, the addition of insulin seemed to help to start further improvement. The following case is an example.

Case XVII.—Male, aged fifty, had a blood pressure of 186/90 on December 22, 1924. This was reduced to 170/86 on April 20, 1925, by weekly injections of sensitized colon vaccine.[1] It had not gone below this point at any time. Then the insulin in doses of one to two units was added and the pressure was reduced to 150/76 on June 23, 1925, at time of writing. If this treatment continues to produce such results, it will be evidence that the poison causing essential hypertension comes from the intestinal tract.

In urgent cases of many kinds, the intravenous injection of glucose solution with larger doses of insulin may prove extremely helpful.

Action of Insulin on Nitrogenous Metabolism.—Henri Labbé (*Bulletin de l'Académie de médecine,* June 17, 1924) found in experiments on dogs that normal metabolism is accelerated by insulin and that the reserves of nitrogenous compounds in the body are used up in consequence. Nitrogen balance previously attained on a definite diet is upset and is not restored as long as the insulin injections are continued. The excess of nitrogen passing out in the urine may amount to thirty per cent., or even more, of the total nitrogen in the diet. The animal's weight falls, though not as conspicuously as the nitrogen in the urine rises. The chemical form in which the excess of nitrogen elimination takes place does not seem to deviate much from the normal. The excessive nitrogen elimination is induced by as little as 0.6 physiological unit of insulin per kilogram of body weight, and increases with the dose given. There is little discomfort at first, but later there is intense thirst, and if large doses are given at shorter intervals, the animal dies in a condition of cachexia. The disturbance of nitrogenous metabolism due to insulin is less under a sufficient, balanced diet of proteins, fats and carbohydrates than where the carbohydrates are reduced and then omitted, though calorically compensated for by increased allowance of fats. Under the latter conditions a greater amount of nitrogen is lost and the animal dies in cachexia. While it disturbs normal nitrogenous metabolism, insulin seems, on the contrary, to improve abnormal nitrogenous metabolism. In the cases of diabetes in which there is cachexia with exaggerated consumption of tissue nitrogen insulin not only checks the loss of weight but often results in a marked and rather rapid gain in weight. General metabolism is improved, assimilation increases, and acidosis diminishes or even disappears.

Blood Changes and Clinical Symptoms Following Oral Administration of Phosphates.—Harold A. Salvesen, A. Baird Hastings, and J. F. McIntosh (*Journal of Biological Chemistry,* June, 1924), observed after the oral administration of neutral phosphates in small doses over a long period a considerable increase in the phosphates of the serum, accompanied by a decided drop in the calcium (about seventeen per cent.). There was also a considerable drop in the magnesium and chlorides. Alkaline phosphate produced no change in serum calcium, and only a slight increase in the phosphate content; sodium and CO_2 content increased considerably, while there was a slight decrease in chlorides. The alkalinity of the blood was observed to increase somewhat. Acid phosphate produced no appreciable change in the calcium content, but a marked increase in the phosphate content. In none of these experiments were there any clinical symptoms. Large doses of phosphates administered over a short period of time produced most violent clinical symptoms, independent of the pH of the solution used, and which had the characteristics of the socalled tetany; the serum phosphates increased and the calcium decreased, as did the magnesium content of the serum. The injection of calcium chloride checked all the symptoms and produced an increase in the serum calcium. The conclusion is reached that the clinical symptoms (tetany) produced by the oral administration of phosphates are due to a reduction of the blood calcium.

Functional (Nervous) Digestive Disturbances.—Heinrich Schur (*Wiener klinische Wochenschrift,* November 27, 1924) calls attention to the nervous and endocrine influences on the intestines. In Addison's disease the influence of the parasympathetic system is seen in the diarrhea and vomiting. The influence of the thyroid gland is seen in the diarrhea of exophthalmic goitre and in the therapeutic test of thyroid extracts in certain cases of constipation. Mucous colitis usually occurs in women, in whom the ovary is usually pathologic. The same may be said of dyspepsia and the abnormal pains observed in young girls. In this group, as well as in migraine, vomiting is very troublesome. The author believes that these sensations are localized in the diencephalon and that they originate in the organs in which the assimulated food is deposited—especially the liver. The possible diagnostic significance of hunger and the feeling of satiety is underestimated. The fat tissue in these persons may be unable to increase the deposits, and may therefore cause a lack of appetite for food. Thin people may eat little because they are thin. Dyspepsia is frequently of purely psychic origin, but it may also be a sign of beginning mental disease.

[1] Treatment described in the New York State Journal of Medicine, March 13, 1925.

Historical Medicine

A Brief Survey of the Evolution of Therapeutics*

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As the treatment of disease is the fundamental aim of medicine, it seems proper that a brief summary should be given of the evolution of therapeutics.

Immediately after its birth, treatment of disease was entirely empirical, but gradually enriched its practice by experience that had been found fruitful. The Babylonians placed their sick in the public places and highways and sought advice from passers by who might have seen similar cases or know of some remedy that might bring relief. The Egyptians, to whom the creation of medical science must be attributed, were also the creators of pharmacy; they employed liniments, tonic potions and plasters, and used laxatives and enemata, but to this empirical treatment they added sacred ceremonies, incantations and magic, a fact which proves that suggestion has been found of value in all times and in all places.

GREEK MEDICINE

The Greeks, who borrowed their first medical knowledge from the Egyptians, began by resorting to suggestion; they treated internal diseases by prayers, charms and votive offerings, limiting medical practice to the dressing of ulcers and wounds. But hydrotherapy lent its aid to suggestion and it is said that Melampous restored to sanity the daughters of Proetus, who were afflicted with mental disease, by means of sacred ablutions and purging with hemlock.

In the temples, which began to be erected about the XIIth century before Christ in different parts of Greece, such as Cos, Cnidus, Rhodes, Epidaurus and Pergamos, the Asclepiades preserved secrets of therapeutics richer in dreams and visions than in medicaments. They took oath never to reveal their knowledge, but, as the practice of the healing art gradually became more logical, secrecy was relaxed and in the VIth century before Christ Pythagoras wrote a book on the properties of plants and on the use of scilla. At this time hygienic measures, diet and gymnastics were more especially employed, but later on they were eliminated from treatment, again to be employed in our day.

A century later Hippocrates brought together all the books pertaining to the medical knowledge acquired before his time, thus erecting a monument which after twenty-four centuries is still the admiration of all who know it. But it was not Hippocrates who enriched therapeutics; he has given us no new medicament, but he founded the science of dietetics, and from the very start he brought it to such perfection that even today there is little to be added. His medical system, which, from the viewpoint of the cause of disease, is vitalism, and from the point of view of the effect is humouralism, should not allow us to forget that he was the first to invite us to empiricism, when he says: "In medicine we do not think that it is proper to have recourse to hypotheses; the unknown should be reached from the known; teaching should be accepted from the most simple men if they appear to know something decisive in respect of a given thing. It is thus, I believe, that our art has developed. Great attention should be given to what happens by chance, if the phenomenon can be confirmed upon several occasions."

Yet two centuries passed by before Philinus of Cos and Serapion of Alexandria formulated the laws of empiricism. The recognized three sources of study, namely, chance which furnishes the facts, experiments which make it known if it is possible to reproduce these facts, and lastly by the analogy by which may be applied to recognized procedures useful in the two former means when applied to a similar case. Archagathos (219 B. C.) introduced Greek medicine into Rome, but his popularity failed on account of his brutal methods of treatment. In the following century Themison developed Methodism, in which treatment was extremely moderate. He attributed all disease to *strictum* or *laxum,* but this fact did not prevent him from the practice of empiricism, like his predecessors, in every case where he could classify a disease in the too narrow limitations of his doctrine, and this must have happened very frequently to him.

Athenaius (69 B. C.) founded the Pneumatic sect, of which Plato and Aristotle had been the forerunner, and had as disciple Aretaios. Pneumatism passed like a breath of wind over Empiricism, which was in no way shaken, and was extinguished, only to reappear with Stahl under the name of Animalism towards the end of the XVIIth century.

During this time pharmacy prospered at Rome and materia medica was enriched by new acquisitions. Its herbal which was then most varied included among the active plants aconite, poppy, henbane, hemlock, hellebore, and many others. From the mineral kingdom it took arsenic, antimony, iron, the sulphate and acetate of copper, the carbonates of sodium and potassium, nitrate of potassium, alum, calcium, gold and silver. The animal kingdom furnished their materia medica with cantharides, salamanders, and vipers, and it also utilized mineral waters which were divided into sulphurous, aluminous, saline and bituminous. It is, however, only right to say that aconite, arsenic, the solanaceæ and vipers were first employed as poisons before becoming remedies and that physicians received them directly from the hands of the magicians and sorcerers.

Encouraged by the exigencies of a rich clientèle, who wished only to take expensive remedies, polypharmacy set itself no limits, and he had the most

*The concluding lecture to the Elementary Course on the History of Medicine in the University of Geneva, delivered July 11, 1925.

success who could invent the most extraordinary medicament. Andromachos of Crete, physician to Nero, compounded a remedy composed of seventy-eight different ingredients, in fact all the materia medica of his time, and called it theriaca, which we may rightly assume to be the masterpiece of Empiricism. Be this as it may the theriaca went down the centuries and was even used in the middle of the last century, and even the great Trousseau advised its exhibition in confluent smallpox, serious types of measles and other forms of malignant fever.

Galen then appeared to put a little order into the progress of medical science, which was going astray in the realms of fantasy. He revived the doctrines of Hippocrates, namely the four cardinal humours—blood, pituit, bile and atrabile. When blood was in excess plethora developed and when either one of the remaining three was in too great abundance cacochymy ensued. To revive the doctrine of Hippocrates merely meant that Empiricism was given new impetus. Galen's therapeutics were in no way original and, although he certainly deserves his reputation as a skillful and lucky physician in the treatment of his patients, his success was due to the fact that he had good judgment in the use of medicaments invented before him.

After Galen, during the decadence of the Roman Empire, therapeutics also fell to a low level and the reader will probably remember that Aetius of Amida (502-575 A. D.) treated his patients by incantations. At practically the same period Alexander of Tralles (525-605 A. D.) went to the opposite extreme and invented a treatment consisting of three hundred and sixty-five potions that were to be taken by the patient during a period of two years. During the long night of the middle ages, Arabia was the only refuge offered to the luminaries of intellectual life, and, as we have pointed out, the Islamic physician contributed largely to the progress of pharmacy, or it may not be too much to say that they created it in the scientific sense. It may unhesitatingly be said that they perfected it to such a degree that the discoveries of modern organic and inorganic chemistry were necessary to bring it back to the level to which they had raised it.

We know that Avicenna gilded and silvered his pills, that he made extracts, syrups and electuaries whose delicate manipulations must have delighted the pharmacists of only thirty years ago. The Islamic physicians were familiar with the alembic and Abulcacis from its use discovered alcohol of wine. Without referring to the many substances derived from the mineral kingdom which were unknown up to their time, we will simply say that the Islamic physicians published a codex which regulated the use of medicaments and any new product could not be prescribed without the permission of the government authorities.

But the mysterious, the inexplicable and the impossible attracted them. Abulcacis attempted the transmutation of metals and although his researches and those of other alchemists have largely contributed to the discoveries and the progress of chemistry, the same cannot be said of the labor expended in the search for the elixir of life, whose study excited the enthusiasm and ardor of this learned man and his many disciples. These researches absorbed considerable intellectual force which, had it been rationally directed, certainly would have aided the progress of therapeutics, which was still in its infancy.

We will not stop to examine the Code of Health in which John of Milan translated the precepts of the School of Salerno in leonine verse. Leaving aside the stagnant treatments of the middle ages and coming to the Renaissance which was dominated by that impetuous individual, the destroyer of genius, namely Paracelsus, let it be said at once that the glory of Paracelsus is a result rather of his genius than of his destructive brutality, for the edifice built by Hippocrates and Galen still remains almost intact in spite of his attacks upon it, while the building of which he himself laid the foundation has endured through centuries and is added to every day. He sowed the first seeds of medical chemistry, which had no existence before him; and he strongly advocated the use of antimony, iron, lead, arsenic and mercury—the specific of syphilis—which remain now and will probably exist for a long time to come as the last trench of Empiricism to be taken.

Paracelsus tells us that "experience has shown that mercury is the sovereign and only remedy for the cure of all ulcers tainted with the great pox. Sublimated mercury has been retained in this business as a general remedy because its great virtue has been known to everybody. It is given by mouth and cures by inducing abundant expectoration of saliva, not because the saliva is the cause of the disease but because it is mixed with it."

Paracelsus also referred to the extraction of the quintessence of plants, but this was only accomplished at the beginning of the XIXth century when P. J. Pelletier and his collaborator, Caventou, prepared sulphate of quinine and afterwards proceeded to the extraction of vegetable alkaloids.

Paracelsus even foresaw the practice of asepsis, for he says: "Do not touch wounds, as they cure themselves; it is the external agents which militate against the process of cicatrization. He inaugurated an ingenious diagnostic method still used today for the diagnosis of indefinite syphilitic manifestations, and he affirmed that by the nature of the remedy one might determine the nature of the disease. Although it must be admitted that the mental equilibrium of Paracelsus was far from perfect, he certainly gave a great impetus to the progress of medicine, but he was led astray by the occult sciences, delved deep in the Arcanums and dallied with researches for the discovery of mysterious panaceas complicated with astral influences, while on the other hand he foresaw with a marvelous lucidity of intelligence the why of things which were still hidden in obscurity, and he says: "Before the end of the world a large number of supernatural things will be explained by physical causes."

While anatomy and surgery, the despised legacy of Herophilos and Erasistratus, progressed by the work of Vesalius, Eustachius and Fallopius, therapeutics lay dormant as if exhausted by the sudden impulse given it by Paracelsus. We will now go on to the XVIIth century, when under the fertile influence of the philosophy of Descartes, new doctrines sprang to life. Empiricism had continually progressed since the days of Hippocrates and experi-

mental science had likewise been considerably enriched. The number of known diseases had been increased and with them both medicaments and medications. Having nothing to guide them, having no positive method, ignorant of pathogenesis, deprived of experimental physiology upon which certitude could be based, physicians of these days had only their memory to resort to, and therefore filled their minds with as many facts as possible so as to be able to find them again should a similar case present itself. Certain partial theories existed as well as some special opinions relating to a given organ or a given viscus and from these theories a logical medication could be derived without resorting to Empiricism.

But these theories and opinions were fantastic and reference to a single one will be quite sufficient as an example. In the days of Hippocrates the uterus was regarded as an animal who could be flattered and attracted by pleasant odors, while it disliked fetid odors extremely and attempted to escape from them, so that in the middle of the XVIth century we find Amatus Lucitanus treating a uterine prolapsus, as he thought, with considerable ingenuity, by causing his patient to inhale musk and pleasant scented herbs in order to attract the uterus upwards, while the vulva was exposed to the stench given off by galbanum and the smoke of burning feathers in order to cause the displaced organ to recede. As is seen, Empiricism at this time was preferable to the therapeutics of sophism, but they had commenced to become weighty and the medical profession, wearied of always referring to memory, felt the necessity for a method which would have as a starting point really rational treatment.

It was then that Borelli developed the Iatromechanical doctrine, according to which all physiological and pathological acts could be reduced to a system of movement, or shock, balancing, pressure and relaxation. During this time Sylvius founded chiniatry in which chemical agents were preferably employed. This doctrine, the germs of which had been planted by Rhazes and developed by Paracelsus and the Spagyrics, attributed disease to acridity. This acridity could be either acid or alkaline, and was treated by contrary chemical medication, which singularly simplified therapeutics, but of course was absolutely insufficient.

A little later Baglivi attempted to resuscitate the *strictum* and *laxum* of the Methodists, but he does not appear to have been very convinced, for he says that many different theories respecting diseases and their treatment can be put forward, and that if any one of these theories represented all the known facts, any one of them would be able to produce a cure. As can be seen, this merely complicated the question by attempting to simplify it. Baglivi studied the question of revulsion with cantharides that even the prudent Hippocrates had given internally in cases of hydropsy. Baglivi was fearful of the use of cinchona in cases of malaria and preferred sal ammoniac and camomile. This man, who wished to overthrow Empiricism, was in reality a retrograde Empiricist.

His contemporary, Boerhaave, became the apostle of the iatromechanical theory to which we have just referred. In his youth he suffered from an ulcer of the thigh, for which all treatment, carried out for four years, had proved fruitless. As a last resort he decided to treat his ulcer with urine, because it contained salts insolution. For all this Boerhaave became a renowned practitioner and inaugurated clinical teaching by the bedside.

Boerhaave taught that there was a salt, putrid, and oily temperament. These temperaments in reality represent what today we call diatheses, the oily temperament being arthritism, in other words a general condition in which the functions of the organism work imperfectly. His treatments, which, it appears, ought to have been tonic and stimulant, were rather depleting and debilitating, and were selected from among purgatives, alkalines and sudorifics, diatetics and blood-letting, with a good dose of suggestion added.

In order to oppose the iatromechanical doctrine, G. Stahl created animism, which was merely a perfected pneumatism. He admitted three movements in the body, namely the circulatory, secretory and excretory. The soul presided over these movements for the regulation of the equilibrium in health and to correct this equilibrium in disease. This theory would seem to imply a psychical or suggestive treatment, but such is far from the case. Stahl's therapeutics were those of the Empirics of his time, although he was moderate in the use of remedies and it is only just to say that in cases of fever he did not exhibit cinchona bark but followed an expectant plan.

And lastly, when organic dynamism, developed by Frederick Hoffmann, has been mentioned, it will be seen that, although the XVIIth century did not bring forth the doctrine which might have been expected, it at least attempted to produce it upon several occasions.

Bordeu gives an excellent outline of the condition of Empiricism during this time and he says: "The king appointed a royal commission with the king's physician as its chief. This commission was intended to collect and examine the empirical remedies and then to select the most useful among them. It was from this school, or rather court, that the majority of remedies employed today (XVIIIth century), such as mercury, tartar emetic, various neutral salts, cinchona, ipecacuanha, kermes and so many others are derived, which finally oblige the Dogmatics to remain in their entrenchments."

Inoculation of smallpox, which would soon be succeeded by vaccination due to Jenner, had been transmitted throughout the ages among various peoples, and Lady Montague, having had her son innoculated, thus introduced the practice from Constantinople into England. Thus we have confirmed the aphorism of Hippocrates: "The medical art is formed little by little and daily becomes enriched by new discoveries; it cannot arrive at the highest point of its perfection until a great number of generations have come and gone."

Two medicaments are to be particularly noted in the therapeutics of the XVIIth century, namely antimony, or rather emetic, which, after savage attacks and passionate eulogies, at last became admitted into materia medica and continued to render great service in the treatment of disease; and cinchona, which was introduced into France and Spain in 1679. This

specific of Paludism took its place beside the specific of syphilis, thus enlarging the field of empiricism, and continued to be one of the great glories of empiricism up to the year 1882, when Richard demonstrated the parasitic nature of intermittent fever, while Laveran distinctly established its pathogenesis, hence transplanting the Jesuit's powder from the domain of empiricism into that of pathogenic therapeutics, which were beginning to develop.

As may be seen, the struggle against Empiricism in the XVIIth century was not extremely successful; the iatromechanists, the chimiaters, the animists and dynamicists had completely failed in their attempt at substitution. The XVIIIth century gave evidence of greater prudence. It produced no Colossus and even seemed resigned to accept the domination of the past; but beneath the silence it was forging invincible weapons which would be used by the XIXth century to assure the triumph of new therapeutics.

HISTOLOGY

Leeuwenhoeck created micrography, which was soon to be used by Bichat for opening up the road to an unknown science, namely histology. During this time von Haller laid the foundations of physiology and Lavoisier placed chemistry on the solid and unshakable basis which Paracelsus had foreseen rather as a therapeutist than as a scientist. The ideas of Paracelsus had brought forth fruits which would be plucked in the XVIIIth century, for at the time when Lavoisier formulated the laws of chemistry, a physician brought back into favor a medication which had been created by Paracelsus—this physician was Mesmer, and his medication was animal magnetism.

However, the end of the century was to be marked by a discovery of the highest importance, namely vaccination, performed by Jenner for the first time on May 14, 1796. The youngest daughter and the greatest glory of empiricism, vaccination took its place at the head of specific remedies, while at the same time she opened up the road to an entirely new medication, namely prophylactic therapeutics. Later on, we shall see how, under the influence of the discoveries at the end of the XIXth century, it overthrew the very doctrine to which it owed its birth.

CLINICAL STUDY

From the beginning of the XIXth century advantage was taken of the work of the preceding centuries. Clinical observation, systematically established by Boerhaave, developed greatly and increased its means of investigation; as early as 1674 Thomas Wilis had noted the presence of sugar in the urine of diabetic patients, while in 1726 Dekkers discovered albumin in the urine. But it was Laënnec who, by his discovery of auscultation, brought clinical medicine up to its present level. His precision in investigation limited the field of empiricism.

HOMEOPATHY

Then Broussais appeared upon the scene with his theory of excitation. According to him there was but one pathogenic agent, namely excitation. This could show itself in two ways; if the excitation was too weak, debility ensued, while if it was too strong it resulted in irritation. In his therapeutics it would seem that Broussais neglected debility and directed his attention especially to irritation, which he treated by debilitating remedies derived from empiricism. Opposed to the doctrine of excitation a new doctrine was developed by Samuel Hahnemann, the essence of which was *similia similibus curantar*—we refer to homeopathy.

From this time on therapeutics gave rise to specialism. Mesmer's successes tempted certain practitioners, who carefully sought among forgotten medications for those that might lend themselves to greater development and a more complete systematization; thus were created hypnotism, metallotherapy, electrotherapy, gymnastics, hydrotherapy and many others which were brought to a high degree of perfection. Then came the great discovery of general anesthesia by ether made by Morton in 1846, while a year later Simpson discovered the anesthetic use of chloroform.

ANESTHESIA

As the story of the first use of ether has often been incorrectly reported, perhaps I may be excused if I give the true facts in detail. These facts are taken from the biographical notes of John Collins Warren of Boston (*The Life of John Collins Warren, M.D.*, by Edward Warren, M.D., Boston, 1860). The first operation under the influence of ether was performed on October 16, 1846.

"The introduction of ether into surgical operations was done by my hands. Mr. W. T. G. Morton, a dentist, of Boston, called on me to say he had found the means of preventing pain in surgical operations, and he was so sanguine in regard to his new application, that I agreed to employ it on the first opportunity.

"The prevention of pain in surgical operations had been a subject I had discussed almost annually in my lectures. I had tried many experiments myself, and had allowed mesmerites and magnetizers to make their trials.

"Nothing, however, had the desired effect, in any degree, but opium; and in cases which threatened to be very painful, as in a case of lithotomy, if I saw no objection, I was in the habit of giving to grown males eight or ten grains, with some degree of effect in obtunding the pain.

"The use of ether, after a few trials, became quite satisfactory; and, from that time, few surgical operations were performed in Boston without it. Many hundred operations have been done by Dr. Mason Warren and myself with ether; and, considering the great power of this agent, it is wonderful we are able to say, that no important ill consequence at any time has occurred.

"A little more than a year after the introduction of ether, Dr. Simpson, of Edinburgh, unluckily introduced chloroform as a substitute. Chloroform was already known to chemists, and had been used as an anesthetic by Mr. Bell, of London, the previous summer. Soon after, a series of deaths from this substance began to take place, and continued, till, in about two years, twenty deaths had occurred. Having previously published *Ether, with Surgical Remarks*, containing an account of ether, and of a number of surgical cases and new operations in which it had been happily employed, I felt myself bound to show the dangerous effects of chloroform, and

to warn surgeons against the use of it. Moreover, I thought it best to recommend ether in the place of it, or, what I particularly preferred, 'strong chloric ether,' which I had directed to be prepared as a substitute. This is preferable to the other, with the exception that it makes the face smart; an inconvenience which can be avoided by rubbing the face with ointment.

"The first publication I ever made on ether was a newspaper article, soon after its introduction. I also wrote letters to the South, recommending it; and to the *British and Foreign Medical Review,* in London, and the *Paris Medical Gazette.* In the latter part of 1847, I published *Etherization, with Surgical Remarks;* and, in the year after, objections to chloroform (effects of chloroform and strong chloric ether as narcotic agents). I should also mention, that, as much as forty years ago, I recommended and employed sulphuric ether in alleviating the last pains, particularly from pulmonary diseases. In such a way, I employed it for Thomas Davis, Esq., at that time Treasurer of the State; also for my sister, Mrs. Brown, to relieve pain.

"About two years before Morton made his application to me, Dr. Wells, of Connecticut, applied for leave to introduce the nitrous oxide, or exhilarating gas, in the Massachusetts Medical College. I agreed to it; and he made the trial, but not with such success as to command attention. I have seen it used, however, since, with a decided anesthetic effect. But it is not so convenient as ether, and not so safe; for it prevents the oxygenation of the blood to an alarming degree.

"It was not until some time after I had used ether, that, in a conversation between Dr. Charles T. Jackson, Dr. Gould and myself, I learned that it was on the suggestion of Dr. Jackson that Mr. Morton was first led to use ether to prevent pain. A violent controversy subsequently took place between Jackson and Morton, and I was frequently appealed to for evidence on the subject. The amount of what I know may be comprised in a few words. Jackson suggested the use of ether to Morton, and Morton first employed it to prevent pain in the extraction of teeth; and, at his request, I first used it in a surgical operation. Dr. Jackson has also stated to me, that he advised Mr. Morton to apply to me to use it in a surgical operation."

SUBCUTANEOUS MEDICATION

In 1845 Rynd invented the subcutaneous method of introducing drugs into the organism, a method popularized by Pravaz, which rendered incalculable service to Empirical therapeutics.

In 1866 Guérin invented absorbent cotton dressings, which, to a certain extent, formed a barrier to infection, while two years later the great Lister gave to the world his methods of antisepsis, for the immortal Pasteur had already shown that infection was due to bacterial invasion. The discoveries of Pasteur completely resurrected surgery and transformed therapeutics. By the discovery of specific bacteria Pasteur created pathogenesis and by experimenting with attenuated virus he founded pathogenic therapeutics. From this time on Empiricism has taken a secondary place in the healing art, while pathogenic therapeutics with their pharmacotherapy, with serotherapy and opotherapy are developing every day to the great benefit of humanity.

That great mind of the Renaissance, whose satirical writings had a profound psychical influence on the reform of medicine, religion and law in the years to follow—we refer to Francois Rabelais—has said that the practice of medicine is but a farce played by three actors: the physician, the patient and the disease.

The Temple of Æsculapius at Epidaurus.—Professor Vaquez in an address delivered before a recent conference of the *Amis de la Faculté* described the Temple of Æsculapius at Epidaurus, which was a kind of cradle where medicine began to prattle before it was even conscious of itself. We quote his words: The Æsclepion of Epidaurus was built about the sixth century before Christ; it attained its splendor about the fourth. Thanks to the generosity of the faithful, its buildings were multiplied, and a theatre was built which, if not the largest, was at least the most beautiful in Greece. In 167 B.C. the whole was still standing. Livy and Polybius have given us a most enthusiastic description of this sanctuary, but it was destroyed in 86 by Sylla and pillaged by Silician pirates. Reconstructed about the eleventh century of our era, it resumed all its magnificence thanks to Antoninus the Good, Emperor of Rome, who had new temples built. It was in this state when Pausanias saw it. It survived for a long time the attacks of Christianity and in the fourth century St. Jerome was dumfounded to see his contemporaries still believing in Æsculapius. In 395 the sanctuary was again despoiled by the Goths who under Alaric I devastated the Peloponnesus. But it was not until 426 that the worship of the god was forbidden by a decree of Theodosius II, Emperor of Byzantium.

Have the temples of Æsculapius, particularly this one of Epidaurus, played a part in the evolution of medicine? This is perhaps the most important question left for us to consider. In the opinion of certain authors, Malgaigne, Daremberg, this part amounted to nothing, and the priests of Æsculapius were no more than jugglers and charlatans abusing the sick by means of the grossest superstitions. This is a very severe condemnation against which writers better informed have protested, in particular Littré whose opinion is worth considering. In order to reconcile these two contradictory opinions, it is necessary to consider the two epochs during which the cult of Æsculapius was in vogue. In the fourth and fifth centuries before our era the ancients believed sincerely in the existence and power of their gods; they thought that good and evil came from them and that they were the dispensers of health. The priests were also sincere and tried to find in the dreams of those consulting them the meanings that it was necessary for them to embody in their prescriptions. Also in this remote time medicine was almost exclusively theurgic. Later credulity was dulled, suggestive influence became more difficult, the number of cures diminished, and the priests realized the necessity of having recourse to other methods. They found it in medicine. Interested in curing their sick, they took advantage of the real notoriety that certain lay doctors had attained.—Translated from *Æsculape.*

Editorial Articles

A SOCIOLOGIST DISCUSSES EUGENICS

Although most of the recognized exponents of eugenics are, naturally, biologists, as a human ecologist, the sociologist is probably better fitted to judge the social value of proposed programs of race improvement. Such is the contention of Professor Warren S. Thompson, of Miami University, in a paper read before a meeting of the American Sociological Society and published in a recent issue of the *Monthly Labor Review*. The eugenics offensive now under way, he finds, rests on three main assumptions that the ecologist has a right to challenge: first, that human nature can be identified with hereditary traits and is therefore unchangeable; second, that we can by means of intelligence tests and by watching their attainment of economic success, pick out the superior people in the population; third, that the processes of human selection are now artificial as contrasted with those existing previous to the last century or two, which were natural; the latter were eugenic, the present ones are dysgenic.

Professor Thompson argues in refutation of the first assumption that the whole of sociology is a challenge to it, for the eugenist fails to understand what social attitudes are and the processes by which they are developed. As to the third assumption, he refuses to admit that the selection of today is less natural than it was two thousand years ago. "It is probably somewhat less rigorous because of modern medicine and charity, but if the lower classes and particularly the defective benefit most from modern charity, the upper classes benefit most from modern medicine, and probably the unfit thus kept alive do not materially change the relative proportions surviving in these different classes. It is the differential birth rate which changes these proportions, as anyone can readily see who studies mortality and natality tables."

It is Thompson's discussion of the second assumption—the significance of intelligence testing and of economic success—that will tend to incite considerable controversy and opposition. A criticism of the present day intelligence tests is that, when there is a high degree of correlation between a high score, good social status, and good schooling, it is assumed that the native intelligence is much higher in these higher social groups, not that the tests, in part at least, by their very nature show up the social factors and assets in the lives of those tested; they are not purely intelligence tests. Also, the tests apply only to native ability of a highly specialized sort—the ability to get on under our present educational system—and not to general ability or intelligence, as is usually assumed. They were devised to select men for the army who could be quickly educated to perform certain given tasks. Finally, the results of the army tests, as set forth by the actual data, do not seem to indicate that those with the highest scores are real superiors, fit for the carrying on and improvement of civilization.

The second part of the assumption—that attainment of a position in the upper economic classes is a proof of superior capacity—depends for its validity upon the possession by these classes of certain specialized faculties, just as the attainment of a high score in the intelligence tests is dependent upon the possession of certain specialized endowments. "One is disposed to wonder whether, unconsciously, the intelligence tests have not been devised to pick out those likely to succeed in the economic competition of our existing social system."

Professor Thompson believes that the qualities enabling people to adapt themselves to the present social process are the following. First, mental alertness is certainly necessary to attain membership in the upper economic classes. But in how many directions does it apply? "Many men of great economic attainment seem almost impervious to new ideas and are quite lacking in that sympathetic imagination which would enable them to understand and appreciate the situations in which other people find themselves." Also they often show a most surprising ignorance of the forces that have brought them to the fore. A second quality is surely tenacity of purpose. But how often does this degenerate into mere obsession, and a thick skinned imperviousness to all but selfish and individual ends—surely not superior but definitely antisocial characteristics. Adaptability is a third characteristic of the economically successful. "The failure to raise children and the failure to modify the social system so that families are not an unnecessary burden, shows a great lack of adaptability in the upper classes, for they control the system. . . . In the face of these considerations, I do not believe we can blithely assume the superiority of the upper classes as a whole and base a sound eugenic program on this assumption."

He concludes with the proposal of a twofold program for the improvement of the quality of population: first, as the eugenists repeatedly urge, elimination of those proved defective from participation in creating the social order; second, change in the present social system so that the raising of a fairsized

family by the members of all classes, except the defective, will not be penalized as at present; and that all children have opportunities to develop their natural capacities.

ICONOCLASTIC

A recently written book by Dr. Abraham Myerson ought to set us thinking [*The Inheritance of Mental Diseases,* Williams and Wilkins, Baltimore, 1925]. The text of the author's discourse is to be found in Francis Bacon, and since it is a lengthy one we should like to quote it merely in part: "But the idols of the market place are the most troublesome of all; idols which have crept into the understanding through the alliances of words and names. . . . The idols imposed by words on the understanding are of two kinds. They are either names of things which do not exist . . . or they are names of things which exist, but yet confused and ill defined, and hastily and irregularly derived from the realities."

It is the term insanity to which Dr. Myerson finds his text applies "with extraordinary emphasis." It is to this already tottering concept that he deals his first iconoclastic blows. Its hold, however, upon the general mind, professional and lay, is attested by the pertinacity with which it resists attack and even, as the author frankly admits, creeps back into his own text. Nevertheless, he justifies a certain amount of inevitable capitulation with common usage if one is candid with oneself and others. He fearlessly exposes this and certain other concepts, the meaninglessness of their unconsidered and therefore unclear definitions, the "fantastic suppositions"—Bacon again—on which they are based. He adduces much actual matter from careful clinical observation and thus points the way to a more accurate nomenclature. Facts can be obtained and terms used less dogmatically only when the realities are more definitely under the eye.

Insanity may have a function in legally and conveniently — however unilluminatingly — designating social responsibility or irresponsibility. But it should no longer be permitted to obscure a mass of facts which have widely different bearings and pertain to conditions in nature, source, and form of manifestation to which, as a term, it gives no clue. Turning directly toward these facts, the writer shows that serious mental dsiease may exist with no insanity present at all.

Mental disease itself is a much abused concept and psychiatry defined as the science of such diseases is quite inaccurately limited. General paresis, for example, surely a disorder in the province of psychiatry, is first of all a disease of the body, quite definitely so. Mental symptoms stand prominently among its manifestations, that is all; a statement which may be made of other diseases. Furthermore, there are numerous mental disorders which never reach a state of insanity. All of which calls for discriminating investigation amid the great variety both of mental and physical phenomena, which may be coincident but cannot justly be grouped under one misleading heading or referred to one underlying condition.

Here the idol of heredity is subjected to the severest thrusts. Biologists, our author objects, have guarded this concept as an abstraction, thus preventing its functioning. Mendelism is apparently a well-established fact; at least it has rendered true service as an hypothesis. Wouldbe Mendelians, and it is American scientists whom Dr. Myerson charges most heavily, have, in its name, applied unscientifically collected data to prove what they first assume. Their acceptance of mental diseases as "really hereditary characters, in the sense that stature and blue eyes are hereditary characters," Myerson believes incompatible with facts. He exposes the irregularly constructed support upon which they find neuropathic constitution behind every form of disorder. They trace this hither and thither so that everything from eccentricity to "softening of the brain" is found to exist in some ancestor or relative to attest the tainted heredity sure to break forth in some one of the polymorphic manifestations at its disposal.

The author does not deny heredity, but he would have the idolatrous trappings removed so that this hypothesis could function in a genuine investigation of exactly what transmission of mental diseases means. Most of such diseases have environmental causes, some unquestionably specific, operating upon the individual or the germ cell. The injury produced may continue to affect the germ plasm for more than one generation and in more than one direction. The results of the injury may grow more intense until the stock is finally destroyed; just as, probably, it tends to grow less until the stock is again in health. Here is the field for a research beyond the abstractions which either deny reality or obscure it.

Incidentally but forcibly Myerson challenges the manner of the socalled investigation and the long accepted account of the notorious Kallikak family. He confesses to a feeling of shame in the face of the unauthentically assembled material so unquestioningly set down and believed far and wide concerning a "nameless feeble minded girl." He expresses disapproval of the complete ignoring of the long line of descendants of Martin Kallikak after he had properly married. He even submits a question modestly suggested by one of his girl students: After all, was

it Martin Kallikak or some one else mating with the nameless girl who started this long line of degenerates?

EXPLOITATION OF IMMIGRANTS

The full text of the report of the Joint Legislative Committee on the Exploitation of Immigrants has recently been published as Legislative Document 76 of the State of New York. A brief quotation from the close of the second chapter of the report, dealing with general conditions, will serve to show why such an investigation was undertaken.

"The testimony of witnesses before the committee reveals that the immigrant coming to this country is frequently exploited and defrauded from 'Ellis Island to the grave,' as one witness graphically stated. From the moment he leaves Ellis Island, he becomes a prey to taxicab drivers, porters and hotel runners, who by various devices endeavor to fleece him of the small savings which he brings to this country. When he seeks employment, through employment agencies, he is cheated either in the fee exacted, or in being sent to distant localities in the elusive hope of securing employment. When in the course of events he accumulates a little money and is desirous of bringing to this country relatives from abroad, he is fleeced by the transmission agent and the steamship ticket agent. When he seeks to acquire a home, he is lured into the purchase of worthless land, sometimes land under water. When he accumulates a little money which he desires to invest, he is induced to purchase foreign money or foreign exchange, frequently on a falling market and on the installment plan, so that long before the last installment is paid the exchange has greatly depreciated or has become worthless. When he or a member of his family becomes ill, he is defrauded by quack medical institutions which advertise to effect immediate cures. When he dies, his family is subjected to extortionate charges for the funeral ceremony, which absorb his savings and leave the widow and children dependent upon the welfare board. Even before the immigrant comes to this country he is systematically forewarned that in his dealings here he should avoid American contact. It is a remarkable fact that nearly all the fraud brought to the attention of the committee was perpetrated on the immigrant by his fellow countrymen."

In scope the investigation included the following subjects: money transmission, notaries public, transportation, and medical practices. It will be of interest here to outline the findings in the last.

Dr. Antonio Stella, chairman of the committee on civic policy of the county medical society of New York, was chairman of the medical committee of the advisory council of the investigating committee, and the report on this phase of the subject consists largely of his testimony and of witnesses produced by him. The doctor's testimony related largely to investigations made by him of advertisements in the foreign language press claiming to effect cures of incurable maladies, or speedily to alleviate physical conditions that can be alleviated only after long, careful and scientific medical treatment. This testimony revealed that there are in this country as a whole about two thousand foreign language newspapers and magazines, with a reading population of about eight million. These publications appear in thirty-two different languages. Stella testified that, judging from his experience, he has found that the majority of immigrant foreigners are dependent on their physical health for their livelihood, and so respond more quickly to quack advertisements, and seek the advice of charlatans rather than that of legitimate physicians. These quacks generally have in their offices interpreters speaking all the languages of the neighborhood. Dr. Stella said: "Fear is the psychological element on which they work. They never attempt to make a real diagnosis, but generally have at hand an x ray apparatus, and the scheme is to show the hand of the patient before the x ray, and ask the relative to see the bones, saying, 'Here, just the same as you see the bones of that hand, I am looking inside of you, and I can see all sorts of worms crawling in you and eating up your insides.' In this way these people are impressed with a terrific fear, and, of course, the point is to extract an amount of dollars in proportion to their fear. . . . The diseases most favored are those of a protracted course, such as tuberculosis, syphilis, cancer, or anything that takes years to cure, even by the legitimate physician. . . . The scheme of these medical quacks is never to charge per visit for an office visit, but for the whole treatment, so the figures for the treatment run very high."

One poor woman testified that she had been required to pay $350, the whole of the life savings of herself and her husband, for stomach treatment before any treatment was given. Stella said that these quack institutions are usually located in impressive quarters, equipped with seemingly elaborate apparatus, and swarming with "doctors" and "nurses" garbed in white. The fake diagnosis of the case is conducted with great elaboration of detail, so that the patient thinks his condition must be very serious. The result is that he is ready to part with almost any sum asked for, and the amount demanded is usually the limit of his resources, which the fake practitioners are very clever at estimating before he leaves the office. In addition to attempting impossible cures, these institutions systematically treat patients for trivial ailments through falsely diagnos-

ing them as serious, then send out the "cured" patient as a propagandist for the "cure."

Stella stated that he believed that if the quack advertisements in the papers could be suppressed, the chain between the charlatan and at least two-thirds of his victims would be broken. He said that attempts had been made by county medical societies and other organizations to induce the publishers of these journals to desist from including quack advertising, but that these efforts had been unavailing because of the vast revenue derived from this source.

He urged that some method be devised for revoking the certificate of authority of the quack doctors who practice through such institutions, and made the suggestion that, if practicable, a statute be enacted whereby medical advertisements, either in the English or foreign press, be viséd by a proper authority before publication, so that deception and fraud might be prevented.

MORTALITY STATISTICS FOR 1921

The Bureau of the Census in its report on mortality statistics for 1921 furnishes some very interesting data. The registration area for that year included thirty-four states, the District of Columbia, and sixteen cities in nonregistration states. There is space here only for a few of the most important figures shown in the report.

The total number of deaths returned from the registration area of the United States, exclusive of Hawaii, was 1,032,009. This amounts to a death rate of 11.6 per 1,000 population, based on an estimated midyear population of 88,667,602, or 82.2 per cent. of the total estimated population of the United States. The rate for 1921, the report states, is much lower than that for any year since the publication of the annual reports beginning in 1900.

The 1,032,009 deaths in the registration area, exclusive of Hawaii, are distributed between the sexes and between white and colored as follows: Males, 52.8 per cent.; females, 47.2 per cent.; white, 88.2 per cent.; colored, 11.8 per cent. Of the colored, the great majority, 96.3 per cent. (equivalent to 11.3 per cent. of the total for all races) are negroes.

The age tables show a remarkable decrease in deaths of infants and young children, due probably to health education and the resultant better care which children now receive in the home. The figures are as follows: In 1900 the deaths under one year of age formed 20.7 per cent., and those of children under five 30.4 per cent. of the total deaths at all ages. In 1921, the corresponding percentages are 15.5 and 21.4.

The highest annual rate from all causes in 1921, by month of death, is for February (13); this rate is 11.8 lower than the corresponding rate (24.8) in 1920, the decrease being due to the great reduction in deaths from influenza and pneumonia. The lowest rate (10.6) is for September. The only months showing slight increases are July, August, and October.

MORTALITY IN NEW YORK STATE

According to the New York State *Weekly Bulletin*, during 1924 there were in the State, exclusive of New York City, a total of 68,341 deaths, giving a death rate of 14.1 in 1,000. The rate was 0.7 lower than the corresponding rate for 1923, which was 14.8, and 0.4 lower than the five year average for 1919-23 of 14.5. Only one year, 13.7 in 1921, has shown a lower rate. With the exception of deaths at sixty-five years of age and over, which, although decreasing over the corresponding total for 1923, increased by 1,000 over that of the five year average, general decreases in other age groups were indicated.

Deaths under one year of age were lower than those of any preceding year and 1,127 less than those of the preceding five year average, which was 8,414. The infant mortality rate was 71 in 1924, 79 in 1923, and 83 in 1919-23. Contributing largely to the reduction in number of the deaths under one year over those of 1920-23 were acute respiratory diseases, gastrointestinal diseases, premature birth, and congenital debility. The death rate from diarrhea and enteritis under two years of age declined 40.2 per cent. over that of 1919-23. Of the important epidemic diseases, whooping cough and acute anterior poliomyelitis are the only causes recording increases over the five year average. Of the diseases common to adult life there was increased mortality from cancer, cerebral hemorrhage, acute and chronic nephritis, and organic heart diseases. Deaths from external violence also increased. Automobile fatalities continued to hold their position as the highest contributing factor to the increasing number of deaths from accidental causes, the rate for 1924 of 21.1 per 100,000 population showing an increase of 4.0 over the five year average.

News Items.

Military Surgeons to Meet.—This organization will hold its annual meeting at the Waldorf-Astoria, New York, October 8th to 10th.

American Public Health Association.—This society will hold its fifty-fourth annual meeting at St. Louis, October 19th to 22d. Programs of special interest to the medical profession will be on public health, epidemiology, industrial hygiene, mental hygiene, child hygiene, and health education.

Tuberculosis Survey.—The Boston Tuberculosis Association will conduct a survey of the city as a basis for a more extensive antituberculosis campaign. The study will be done through the cooperation of various health agencies, and will be under the direction of Murray P. Horwood, Ph.D., of the Massachusetts Institute of Technology.

Free State Medical Regulations.—The Government of Irish Free State announces that subject to ratification by the Irish Parliament, it will establish a separate and independent medical register, beginning next February. This will bar doctors qualifying in the Free State from practice in Great Britain or northern Ireland, and doctors from those sections from practice in Ireland.

American College of Surgeons.—The next clinical congress of the American College of Surgeons will be held at Philadelphia, from October 27th to 30th. Sir Arbuthnot Lane of London will deliver the Murphy Oration on Surgery, and the Fellowship Address will be given by Lord Dawson of London; the president-elect, Dr. Rudolph Matas, of New Orleans, will give the inaugural address. A hospital conference Monday and Tuesday will be held in connection with the congress.

Gifts and Bequests.—The will of Mrs. Dorcas Knox Braisted of New York leaves her residuary estate, worth around a half million dollars, to be divided equally among seven charitable organizations, which include the Manhattan Eye, Ear and Throat Hospital, the White Plains Hospital, and the Northern Westchester Hospital; $20,000 also was given to the Northern Westchester Hospital Association of Mount Kisco.

The will of the late Wilson Catherwood provides $250,000 for the Children's Hospital of Philadelphia, and $50,000 for the Pennsylvania Hospital.

The will of the late John H. Flagler provides $365,000 for St. Luke's Hospital, New York, and $265,000 each to New York and Presbyterian Hospitals. The sum of $400,000 will establish the Alice Mandelick Flagler Foundation, which is chiefly for nurses' homes.

The will of the late Henry H. Jacobson provides $1,000 each for Mount Sinai and Montefiore Hospitals.

St. Rose's and St. Francis' Hospital each receive $5,000 from the will of the late Maria Monica MacSloy, the balance of her estate going to St. Vincent's.

Under the will of Albert H. Whipple, of Whitinsville, Mass., the Whitinsville Hospital will receive $2,000 on the death of the testator's wife.

The Union Hospital Association will receive $162,000 and the Beth David Hospital, $81,000, from the will of the late John J. McKenna.

The New York Eye and Ear Infirmary will receive approximately $50,000 from the will of the late Dr. Nicholas R. Dann.

Col. Henry H. Rogers has given $30,000 to the Southampton, Long Island, Hospital, which will provide for an addition to the school of nursing, and for its physiotherapy work.

THE REPORT OF THE SUBCOMMITTEE ON THE CONVALESCENT CARE OF MEDICAL PATIENTS OF THE PUBLIC HEALTH COMMITTEE OF THE NEW YORK ACADEMY OF MEDICINE

(*Concluded from page 297*)

HOMES FOR SPECIAL TYPES OF PATIENTS

Provision should be made, either through special homes or through special departments of a large convalescent home, for meeting the requirements for convalescence of certain types of patients. These types are the cardiovascular, the dietetic and the respiratory.

Cardiovascular group.—Whether convalescent from active heart disease or from heart failure these patients need supervision and a regimen somewhat different from other convalescents. Convalescent homes undertaking the care of cardiac patients should be situated preferably in a rural district, not at the seaside, and at not above 1200 feet altitude. Patients should not be required to live above the second floor unless elevators are provided.

The medical care of the patients should be under the control of one or more consulting physicians who should visit the convalescent home at intervals and see that the medical regimen is properly carried out. A physician trained in the management of heart disease should either be resident in the institution or visit it each day. He should examine each patient on admission and on discharge and make other examinations at regular intervals. He should prescribe the amount of rest and exercise that each patient is allowed. In large homes patients should be arranged in groups, such groups being made up of patients allowed similar amounts of rest and exercise. There should be a physical director who should have charge of the exercise and recreation of the patients the amount and character of which, however, shall be determined by the physician.

Dietetic group.—One or more visiting physicians should be appointed for these institutions. Competent dietitians will be required for these cases though one less carefully trained may be assigned for the alimentary group of patients. Limited laboratory facilities should be provided where diabetic patients may be taught to make the necessary examinations of their urine. This should be a useful adjunct in the case of other groups.

Respiratory group.—In homes for these patients somewhat more than the usual amount in cubic feet of air per bed should be provided. The danger of infection should be considered and patients recovering from infectious conditions should be segregated as to their sleeping accommodation. They need not be excluded from the common dining room if mechanical dishwashing apparatus which sterilizes is used. Opportunities should be provided for outdoor life in cold or bad weather for those who would be benefited by it and the daily routine should be adapted to this purpose.

As the requirements for patients recovering from respiratory conditions are almost entirely limited to about six months in the year, some arrangement which would utilize these homes as vacation homes during the summer months is recommended.

THE STAFF OF THE CONVALESCENT HOME

The subject of the care and management of the convalescent state in homes specially organized for that purpose has an educational aspect. In the first place the patients themselves, even in the short time of their residence in a home of this nature, will learn how to correct errors in personal hygiene and faulty habits of living. They gain also a knowledge of the causes, preventable in many cases, that have brought about the condition from which they have suffered. This knowledge will be the more readily attained and be the more firmly fixed if it be imparted with intelligence and tact on the part of those in whose care they are for the time being. And so this had considerable bearing upon the problem of the appointment of proper personnel on the staff. Furthermore, as the question of convalescence is studied, it will bring out many matters of educational value to the individual members of the staff also.

Any group of convalescent patients requires medical supervision, and an institution, even of the simplest kind, should make provision for this, either by maintaining a resident physician or by arrangement with one of the physicians in the vicinity for stated visits; several homes conveniently situated may combine in such arrangement. In a convalescent home which is restricted to patients of one type a resident physician is especially needed, and one who has had special training in the type of disease under care is to be preferred.

It would be advantageous if some plan could be formed for a visiting staff of consulting physicians

whereby the homes can be coordinated with the staff of hospitals whence the patients come. This can best be worked out after the homes are established.

The resident physician should be appointed for a definite but limited term of service and should be paid a salary. The character of the service in some of the homes would probably not be especially attractive, so that oftentimes it would be difficult to obtain a physician well fitted for the position. In the special type of homes, on the other hand, for example, the home for cardiac patients, there should be unusual opportunity for study, and the position of resident should have a strong appeal. Women physicians, in particular, might find a favorable field of work in this position.

The resident physician should have authority over the nursing staff and the dietitian and physical director should be responsible to him.

Every convalescent home should have a competent, fully trained nurse in charge; other nurses or trained attendants in subordinate positions should be appointed by her.

A competent dietitian should be one of the staff of homes for convalescents requiring dietary supervision. Homes with no dietitian will need a housekeeper with knowledge of diets and the proper preparation of food.

There should be a physical director having charge of all physical activities of the patients. The physician, however, should prescribe the kind and amount of exercise suited to the patients.

THE EQUIPMENT OF THE CONVALESCENT HOME

In every convalescent home there should be simple equipment for physical exercises and apparatus necessary for indoor and outdoor games and other forms of amusement. The ordinary equipment for the examination of patients is to be provided, including medical scales for the weighing of patients, a few remedies, simple surgical dressings and instruments, and antidotes for poisons; and laboratory facilities for the examination of urine.

It is essential that there be a room set apart for the prompt isolation of a patient should occasion arise, as it may in any convalescent home.

The special equipment necessary in a home for heart cases includes a sphygmomanometer, a spirometer and a standardized preparation of digitalis; in a home for the care of diabetic patients a laboratory where patients may make examinations of urine is needed, and in homes for respiratory convalescents a sufficient number of atomizers and inhalation apparatus for individual use and individual equipment for outdoors in cold or wet weather.

RECORD SYSTEM

In a convalescent home there should be kept a proper record of each patient. In the record should be the findings of physical examinations, a chart of weight, and general improvement, a statement of the treatment prescribed and an account of any interruption of a steady convalescence. In special homes, cardiac and dietetic particularly, the record should be more elaborate and contain such additional data as may be of aid in furthering scientific knowledge of the disease from which the patient suffered.

CENTRAL BUREAU AND FOLLOWUP SYSTEM

For the proper placing of convalescent patients there should be a central bureau or clearing house organized by the homes themselves. This requires an office in the city with a small personnel. In this central office would be kept a list and description of convalescent homes and a census record of the number of vacant beds available. Hospitals, dispensaries or physicians would file applications for admissions to convalescent homes, with necessary data concerning the applicant. The central bureau would then select the proper home and arrange for the transportation of the patient. The bureau would see also that with each patient there was sent an adequate record, including examination diagnosis, duration of disease and treatment given. A standard form should be used for this information in order that it may be incorporated directly into the records of the home. On final discharge of the patient the home should forward to the place from which the patient was sent a statement of the length of stay in the home and of the condition on discharge.

CONCLUSION

The management of convalescence is of great importance in that this determines the time and the completeness of a return to health and thus resumption of work. Convalescence should be considered as a stage in an illness and not as a dissociated event. Adequate measures, therefore, should be employed to insure proper treatment during the convalescent state.

At the present time convalescent management is unsatisfactory. The homes in existence are not correlated, the organization in general is not a comprehensive one and the supply of convalescent beds is far below the normal demands.

Two classes of convalescent homes for medical cases should be planned; one for private, hospital and dispensary patients who are able to pay a moderate sum for their maintenance; another for those able to pay little or nothing. Both classes should make provision for adequate care of one or more of the different types of medical convalescents, provisions for quarters, staff and treatment.

The correlation of the homes, their relationship to hospitals, dispensaries and physicians, and the distribution of patients to them, should be in charge of a central agency.

A comprehensive plan for convalescent relief should begin with the establishment of this central agency and the classification and where necessary, the reorganization of existing homes. With this accomplished, the further development should be along lines suggested in this report.

(*Signed*) Robert J. Carlisle, M.D., *Chairman.*
Glentworth R. Butler, M.D.
Warren Coleman, M.D.
Edward S. McSweeny, M.D.
George O'Hanlon, M.D.
B. S. Oppenheimer, M.D.
L. H. Shearer, M.D.
George B. Wallace, M.D.
L. F. Warren, M.D.
William R. Williams, M.D.
John Wyckoff, M.D.

Book Reviews

PNEUMONIA

Pneumonia. Its Pathology, Diagnosis and Treatment. By the Late R. Murray Leslie, M.A., B.Sc., M.D. Edited and Revised by J. Browning Alexander, M.D., M.R.C.P. (Lond.) London: William Heinemann (Medical Books) Limited, 1924. Pp. 351.

This monograph is the result of an attempt to give the reader a succinct account of all that is known about pneumonia from the earliest days to the present time. The original author, R. Murray Leslie, gives his wide experiences with diseases of the chest over a period of almost thirty years. It is a posthumous work, and the only part of the book that needed revision was that dealing with bacteriological questions, such as the typing of the pneumococcus according to the Rockefeller Institute classification. There was also too much enthusiasm regarding the value of vaccine therapy at the time of the original writing and, therefore, the opinions on this subject had to be modified somewhat.

The introductory chapter outlines the history, nature, incidence, epidemiology and classification of pneumonia. Thirteen chapters are devoted to the etiology, pathology, clinical features, symptomatology, physical signs, atypical forms, complications and sequelæ, diagnosis, prognosis, prophylaxis and the treatment of lobar pneumonia. Special chapters, respectively, are devoted to bronchopneumonia, influenzal pneumonia, pneumonia in children, surgical (postoperative) pneumonia, socalled specific drug treatment, specific serum therapy (antitoxin treatment) and specific vaccine therapy. Good results are reported from the intravenous injection of hydrogen peroxide in a series of cases of severe influenzal bronchopneumonia—a procedure rarely used in this country.

Taken by and large, this book may well be recommended as a safe guide in the treatment of pneumonia. The reasons for each therapeutic indication are clearly given. The style is intensely didactic and makes interesting reading. The bibliography is quite extensive and includes references not only to English, but also to American and German literature. It is a most complete treatise on the subject of pneumonia.

CRIMINAL ABORTION

Die Uneheliche Mutterschaft. Eine Sozialgynäkologische Studie, Zugleich ein Beitrag zom Problem der Fruchtabtreibung. Von Dr. Egon Weinzierl. Mit 4 Kurven und 10 Tabellen im Text. Berlin-Wien: Urban & Schwarzenberg, 1925.

The subject of criminal abortion and the mitigation of the evils resulting therefrom is now receiving world wide attention. In this monograph the author strikes at the root of the causes of abortion. He systematically investigates the various motives that induce mothers to subject themselves to this procedure. This subject is of momentous interest not only to physicians and surgeons, but also to lawyers, sociologists, hygienists, theologians, moral philosophers and statesmen. It is also quite an important part of state politics, social hygiene and race biology. Its large contribution to mortality, morbidity and sterility makes it of great practical importance; it affects not only the individual woman, but also the family and the entire state.

The causes of the recent rapid increase in criminal abortion are to be sought chiefly in the changes in moral concepts and the unfavorable economic conditions, increased especially as a result of the World War. The various measures proposed heretofore to meet this problem include the repeal of laws punishing the perpetration of abortion, the repeal of the laws favoring professional secrecy, the introduction of laws for the official reporting of abortions by physicians and midwives, the eradication of quackery, the supervision of midwives and the prohibition of contraceptives.

Abortions are much more common in married than in unmarried women. The author conducted a systematic and minute investigation on his material of five hundred unmarried females as to the reason for their resort to abortion and also as to their reason for their desire to complete their pregnancy. The social and mental status of each mother and father were also carefully studied.

The following recommendations are made: 1, elevation of the psychic level and moral attitude of young women by educational means; 2, the development of social welfare agencies, and 3, the promulgation of new laws for the official reporting of every pregnancy and abortion and the establishment of a set of rules for the indications for the interruption of pregnancy. These measures the author believes will help considerably in the production of socalled desired children.

This is a very comprehensive review of the whole subject of unmarried motherhood and criminal abortion well worth reading.

REPORT OF THE TRUDEAU SANATORIUM

The Fortieth Annual Medical Report of the Trudeau Sanatorium and of the Trudeau Foundation, 1924.

This is an unusually interesting report and shows the valuable work the sanatorium is doing. The report proper is preceded by an introduction by Dr. Lawrason Brown, and the details are given by the chief resident physician, Dr. Fred H. Heise. The Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis publishes the following interesting studies:

The Value of the Trudeau Sanatorium's Five Diagnostic Criteria of Pulmonary Tuberculosis in Negative Cases. A Study of 264 Cases Admitted to the Sanatorium, Diagnosed as Nontuberculous and Followed Up from One to Seven Years. By Lawrason Brown, M.D., and Fred H. Heise, M.D., Trudeau Sanatorium.

An Attempt to Classify by Means of the X Ray Cases of Suspected and Definite Pulmonary Tuberculosis Showing Less Than a Definite Parenchymatous X Ray Lesion. By Fred H. Heise, M.D., and Homer L. Sampson, Trudeau Sanatorium.

Immunological Studies in Tuberculosis. II. Further Observations on Skin Hypersensitiveness in Experimental Tuberculosis. By S. A. Petroff, Ph.D., Research and Clinical Laboratory, Trudeau Sanatorium.

Studies with Ultraviolet Light. I. The Effect of Quartz Mercury Vapor Irradiations (Alpine Quartz Light) on Experimental Tuberculosis of the Cornea in Rabbits. By Edgar Mayer, M.D., and Morris Dworski, A.B., C.P.H., Saranac Laboratory for the Study of Tuberculosis.

Studies with Ultraviolet Light. II. The Action of Quartz Mercury Vapor Irradiations on Inhalation Tuberculosis in Primarily Infected and Sensitized Guineapigs. By Edgar Mayer, M.D., and Morris Dworski, A.B., C.P.H., Saranac Laboratory for the Study of Tuberculosis.

Studies with Ultraviolet Light. III. The Bactericidal Action of Mercury Quartz Vapor Light Irradiation. By Edgar Mayer, M.D., and Morris Dworski, A.B., C.P.H., Saranac Laboratory for the Study of Tuberculosis.

PHOTOSYNTHESIS

The Physiology of Photosynthesis. By Sir Jagadis Chunder Bose, M.A., D.Sc., LL.D., F.R.S., C.S.I., C.I.E., Director, Bose Research Institute, Calcutta. With sixty illustrations. New York, Toronto, Bombay, Calcutta and Madras: Longmans, Green and Co., 1924. Pp. xx, 287.

In reading this book we avail ourselves of the privilege of applying the interest of the specialist in the field of plant life or of that of the physiologist devoted to the study of human activity. Either student will be stimulated by this carefully prepared account of experiments directed to quantitative investigation of photosynthesis. The writer gives the minute technical steps of his procedure and with these frequent brief summaries of the progress of his experiments. He keeps always in mind the cosmic extent and significance of the phenomenon under examination. Thus the book pertains to the processes of life at whatever level and in whatever form. Photosynthesis is carried on at the physiochemical stage but just as these investigations serve to establish the "underlying unity of physiological mechanism in the plant" so do the author's work and his conclusions remind us of the unity of function and the similarity of its character in all living activity. It is the same life task which is performed in the plant or repeated in more and more complicated form from the lowest to the highest function of the highest organism, man. The process, physicochemical or psychical and conscious, is that which the author has summarized for the plant, "a state of unceasing activity, absorbing and storing energy from without, setting free and dissipating it from within."

TROPICAL MEDICINE

Proceedings of the International Conference on Health Problems in Tropical America. Boston: United Fruit Company, 1924.

This volume of transactions contains an imposing array of contributions, including papers by such well known observers as Rosenau, Bass, Agramonte, Rogers, Noguchi, Castellani, Ashford, Banting, Lane, Newsholme, Oliver, Park, and Deeks, as well as a host of other outstanding workers in tropical diseases. Coming from such sources, the information presented may be said to reflect the very latest knowledge concerning this class of disorders, as well as certain nontropical subjects such as insulin, by Banting; the causation of cancer, by Lane; vaccines in pneumonia, by Park, etc. A very wide range of tropical disorders is covered in this volume, and the results of much experience in their diagnosis and treatment are summarized. Altogether, the book cannot fail to be of absorbing interest to all concerned with the diseases prevalent in hot climates. The editing of the volume, as well as its mechanical features, leave nothing to be desired.

BIOLOGY

Handbuch der biologischen Arbeitsmethoden. Unter Mitarbeit von 500 bedeutenden Fachmännern herausgegeben von Dr. Emil Abderhalden, Direktor des Physiologischen Institutes der Universität Halle a.d. Saale.

Abt. IV, Angewandte chemische und physikalische Methoden, Teil 9, Heft 3. Methoden sur quantitativen Bestimmung des Stoffwechsels des Gesamtorganismus von Organen und Zellen.

J. E. Johansson describes the technic of studying the metabolism of energy. L. Langstein and E. Edelstein describe the technic of obtaining the total metabolism of infants. A. Gigon describes his comparative studies on the metabolism of man on an unselected diet. E. Küster discusses the method of raising of mammals free from bacteria.

Abt. IV, Angewandte chemische und physikalische Methoden, Teil 10, Heft 3. Quantitative Bestimmung des Gasstoffwechsels.

This number is concerned solely with a description of the methods of determining the gaseous metabolism in animals and man, as used at the nutrition laboratory of the Carnegie Institute of Washington. It is a highly technical monograph.

Abt. IV, Angewandte chemische und physikalische Methoden, Teil 12, Heft 2. Gerichtliche Medizin.

E. Ziemke describes the chemical, microscopic and physical methods for the examination of blood from the medicolegal standpoint. It is a very practical, exhaustive and useful monograph on the subject.

Abt. V, Methoden sum Studium der Funktionen der einzelnen Organe der tierischen Organismus, Teil 5A, Heft 2. Methoden der Muskel- und Nervenphysiologie.

R. Grammel gives the theoretical foundations for the mechanics of joints as worked out by higher mathematics. E. Hirt describes graphic methods for the demonstration of normal and pathologic courses of voluntary movements.

Abt. XII, Methoden zur Erforschung der Leistungen von einzelligen Lebewesen, Heft. 3. Spezielle Methoden. Untersuchungen an einzelligen Lebewesen.

E. Pribram and F. Zach describes the most important methods used in working with fungi. These are described in great detail and are of a highly technical character. The same applies to the article by F. Fuhrmann and E. Pribram on the most important methods in the work with bacteria.

Abt. XIII, Methoden der Immunitätsforschung und der experimentellen Therapie, Teil 2, Heft 3. Berlin, Wien: Urben & Schwarzenberg, 1924.

F. v. Gröer discusses skin reactions. The technic of the tests and the clinical features of the reaction are described in great detail. The various reactions are illustrated in colors. Skin reactions are divided into (1) functional skin reactions, (2) inflammatory reactions, and (3) cutaneous pigment reactions. The functional reactions are subdivided into those due to mechanical stimuli, those due to thermic, electrical and actinic stimuli with avoidance from tissue injury, and the pharmacodynamic reaction. The form pro-

duced by mechanical stimuli includes the dermographic reaction and traumatic reaction. The pharmacodynamic reaction may be a lymphagogue reaction, may be due to vasoconstrictor or vasodilator drugs, or there may be a combined vasoconstrictor and vasodilator reaction. The lymphagogue reaction is subdivided into three groups: 1, that due to hypotonic and hypertonic solutions, as various ions and some indifferent crystalloids and colloids; 2, to alkaloids; and 3, to proteins, protein split products and biologic substances.

The inflammatory skin reactions may be classified into three groups: 1, those due to mechanical stimuli; 2, those due to thermic electrical and actinic stimuli; 3, those due to chemical physicochemical and biologic stimuli. The latter may be subdivided into primary and secondary toxic phlogogenic substances. The former may be of known or unknown nature and include the genuine proteins and protein decomposition products.

B. Schick, F. v. Gröer and K. Kassowitz discuss the method and technic of studying the normal antitoxic immunity to diphtheria in man. K. Landstiner describes the methods of making antigens and antibodies for immunochemic investigations.

E. Paschen describes the technic of the microscopical study of the virus of smallpox.

GYNECOLOGY

A Practice of Gynecology. By Henry Jellett, M.D., F.R.C.P.I. Fifth Edition. With 417 Illustrations (Many in Color) and Fifteen Colored Plates. Philadelphia: Lea & Febiger, 1925.

This edition has been considerably revised and amplified. The additions include such subjects as Gas Inflation of the Peritoneal Cavity and of the Fallopian Tubes, Ovarian Transplantation, the Manchester Treatment of Uterine Prolapse, Implantation Adenomata of Endometrial Origin, Sterility, and The General Principles Which Govern Gynecological Operations. The chapter on Menstruation and Its Disorders has been revised to conform with the more modern views as have also the chapters on endometritis and metritis.

Among the list of diagnostic instruments, Hegar's dilators are mentioned. This sounds somewhat obsolete in this country. Barnes's bags are also mentioned but not much used by us. Among us also, it is practically agreed that the curette has no place in the treatment of endometritis, but the author recommends its use.

Menstruation and the menstrual disorders are discussed fully, with emphasis on the endocrines.

The venereal diseases, their prophylaxis, treatment and social significance, are not given the importance they deserve in a book of this kind. Cyllin, a creolin preparation, not much used or known in this country, is recommended in the treatment of gonococcus vaginitis.

Uterine displacement is discussed in profuse detail. The chapters on diseases of the uterus and its appendages are richly illustrated with pictures of the pathological conditions, both gross and microscopic. A special chapter is devoted to injuries due to pregnancy and labor. The charts illustrating the causes of sterility, both in the male and female, simplify the treatment considerably.

The value of vaccine treatment in gynecology, discussed by R. J. Rowlette, is overemphasized. The technic of the preparation and administration of vaccines is given in detail.

W. C. Stevenson discusses radiotherapy in gynecology in a very comprehensive and useful manner.

The latter half of the book is concerned with the surgical anatomy of the genital organs and operative technic. Much space is devoted to the operations for the various types of fistulæ—vesicovaginal, urethral and ureteral—more than is usually devoted to these operations. The illustrations of the various types of operations are well selected and numerous. In regard to ovarian transplantation, the author sees some hope only in the autoplastic grafting of the ovary. The main effect he considers to be the psychic effect. It does, however, defer the symptoms of the menopause and the cessation of menstruation. As much of the ovary as possible should be preserved in situ during operations on the uterine appendages. The Manchester treatment of uterine prolapse, originated by Donald of Manchester, consists of anterior colporrhaphy with excision of the vaginal forni and is recommended as curing all cases of prolapse without the assistance of perineorrhaphy, even if the perineum is badly torn.

The conception of implantation adenomata is a recent one. They result from the implantation of epithelium, which escapes from the fallopian tubes into the pelvic cavity, coming most probably from the lining epithelium of the uterine cavity, or less commonly from the tubes themselves. They are treated either conservatively or radically.

On the whole, the book may be said to be serviceable, especially for medical students.

FICTION

This Mad Ideal. By Floyd Dell. New York: Alfred A. Knopf, 1924. Pp. 246.

Floyd Dell has already distinguished himself as chronicler of the struggle years. Most of his readers have made their painful way across the threshold of adulthood. They can look back with fleeting sympathy on the emotions and ordeals of under twenty-one. And then perhaps if they have read other books by Mr. Dell they will realize that the author feels no such vast chasm separating the young from the mature. Judith and Roy of *This Mad Ideal,* whether with Mr. Dell's consent or not, merely adopt more juvenile phrasing in their wrestling with life.

Judith the girl is supposed to be something of an individual. She quite frequently thinks for herself, but her thinking is nevertheless clouded by the herd. An orphan, she is brought up by well meaning relatives. She is always a little "different" because of that intangible inner life with which Mr. Dell equips her, ostensibly an inheritance from a freeminded mother, or from a shutin period of Judith's life. Dell makes her a moral coward but not a physical coward. His thesis occupies itself chiefly with the outgrowing of her moral cowardice, a function of development in itself. This theme is interestingly handled, contrasted, viewed from all angles. Then put between covers and the job is finished. The question now remains whether that is enough for a novel. Is it enough for Floyd Dell to be better than many and not so good as some? He probably knows.

We hope he considers this a trifling thing, a point on which he must take his stand, get it out of his system to make way for the coping of adult minds with adult situations. He can write interestingly. He can capture that wistful looking back on the comic-pathetic vagaries of youth to perfection. *This Mad Ideal* finds him still looking back. True creative work must look ahead.

Medicoliterary Notes.

During the year 1924 the Health Department of New York City prosecuted in the criminal courts 22,481 cases of violation of sanitary measures.

* * *

Mental Hygiene for April emphasizes the subject of mental hygiene and the college student. The topic is treated by Dr. Frankwood E. Williams in his second article on Mental Hygiene and the College Student; Dr. Arthur H. Ruggles in College Mental Hygiene Problems; Major Harry N. Kerns, M. C., in Management of Acute Mental Hygiene Problems Found Among College Men; and Dr. Martin W. Peck in Mental Examinations of College Men.

* * *

In order to enforce safety in refrigerating plants, a revision of some of the ordinances of New York City has been made which led to the formulation of a code on refrigeration, a classification of the types of refrigerating plants, and safety rules for both.

* * *

A rcent publication of Hoeber is *Pediatrics of the Past,* compiled by John Rurah. It is an anthology of the works of early writers on children's health and care. Other late publications of interest to the medical profession are *The Physiology of Exercise,* by Dr. R. Tait McKenzie (Lea & Febiger); *The Normal Mind,* by Professor W. H. Burnham (Appleton); *Community Dental Service in New York,* a study of the facilities for dental care made by the Committee on Dispensary Development of the United Hospital Fund; *Living Organisms,* by Edwin S. Goodrich (Oxford Press); *Mental Diseases,* by Dr. James V. May (Gorham Press); *Social Consequences of Business Cycles,* by Maurice B. Hexter, Ph.D. (Houghton); and *Health and Environment,* by Leonard Hill, M.B. (Longmans).

* * *

Dr. Louis Casamajor, professor of neurology at Columbia University and visiting neurologist at Beekman Street Hospital, New York City, plans to establish a "morale" clinic which he proposes to make the nucleus of an extensive study of industrial neurosis to find what factors delay return of function in the event of injury. . . . . Dr. Casamajor proposes to make investigation of large industrial plants throughout the country—those where the morale is low and those where it is high—in an endeavor to get at the underlying causes in each case.—*Nation's Health.*

* * *

Good books for Fall week-end outings are *A Mother's Recompense,* by Edith Wharton; *Beau Geste,* by Percival C. Wren; *Bill the Conqueror,* by P. G. Wodehouse; *Stolen Idols,* by E. Phillips Oppenheim; *What of It?* by Ring Lardner; *High Noon,* by Crosbie Garsten; *The Great Gatsby,* by F. Scott Fitzgerald; *The Annexation Society,* by J. S. Fletcher; *Love,* by Elizabeth of German garden fame; *The Glorious Apollo,* by E. Barrington; and the *Cuckoo in the Nest,* by Ben Travers.

* * *

New York State has assigned a quota of $1,000 to every school district employing a medical inspector in full time in an effort to stimulate medical inspection of schools.

* * *

In a pamphlet recently issued by the American Society for the Control of Cancer four ways are given in which the nurse can aid in cancer control. They are as follows: 1, By making herself a source of authentic information with respect to prevention, recognition and cure of cancer; 2, By detecting early cases which would otherwise escape recognition until they had passed to an incurable stage; 3, By exerting an intelligent influence upon those who have cancer in its early and curable stages, and inducing them to seek immediate and competent treatment; 4, By exerting through her enlightened intelligence an influence against the operations of quacks and other incompetent persons who but add to the plight of cancer patients. The booklet adds that the nurse can also render great assistance in combating the unreasoning fear of "the knife." Through her own experience she will be in a position to explain, and so can bring to those with whom she associates a rational view of cancer, its prevention, treatment and cure.

* * *

The National Committee for the Prevention of Blindness has recently issued its tenth annual report. From a small group of sixty-five men and women the membership has grown to 10,053, with representatives from every State in the Union.

* * *

Specialized Courts Dealing With Sex Delinquency is the title of a work recently published by the Bureau of Social Hygiene of New York. The writers are George E. Worthington of the American Social Hygiene Association, and Ruth Topping of the Bureau of Social Hygiene. The book comprises studies of procedure in Chicago, Boston, New York and Philadelphia.

* * *

The number of hospitals in the United States has increased since 1873 from 149 to 6,762; the number of hospital beds in the same period from 35,453 to 770,375; the population of the country has increased during the same years from 38,558,371 to 105,710,620.

* * *

An increasing number of colleges and universities in the United States are offering courses on public health subjects, in their summer schools. These courses last from three to six weeks and in many instances an extensive program is presented, with instruction and lectures by authorities in their various fields. There are more than ninety courses in all.

* * *

The proceedings of the annual meeting in 1924 of the International Association of Industrial Accident Boards and Commissions has recently been issued as *Bulletin* 385 of the Bureau of Labor Statistics.

* * *

In the course of a year, according to a recent report, every American resident consumes on the average more than ninety pounds of pork. The per capita consumption of beef is more than sixty pounds. Veal is only eight pounds per capita, and mutton and lamb only five pounds per year.

* * *

A recent number of the *Manchester Guardian Weekly* gives the following amusing account of a discussion which took place lately when the House of Lords was considering the Performing Animals bill.

Viscount Ullswater said he would like to know whether "animal" included insects. He was not a trainer of fleas, but what would happen under the bill to a man who withheld from fleas their natural food, which he presumed was human flesh? Would he or would he not be treating them with cruelty? Lord Desborough for the Home Office stated "animal" included birds, reptiles and fish. He was sorry that fleas apparently did not come within the scope of the bill.

Viscount Ullswater said that before the report stage had been reached he hoped the noble lord in charge of the bill, Lord Danesfort, would consider whether insects should be included. Lord Danesfort said that until Lord Ullswater spoke he had not realized the great importance of the matter. He would consider it. Lord Desborough added that he wished fleas had been brought to his attention before.

The bill passed through committee.

* * *

The *Nation's Health* recently printed in full the prize winning article of Mr. Edward A. Fitzpatrick on Interrelationships of Hospital and Community. A prize contest for articles dealing with this subject was announced by the Modern Hospital Publishing Company. The first prize of $350 was awarded to Mr. Fitzpatrick, who is dean of the Graduate School of Marquette University, Milwaukee, Wis.

Abstracts from Current Literature

ENDOCRINOLOGY

Endocrinology in Pediatrics, With Special Reference to the Hypoplastic Dyspituitary Type of Child.—H. L. Dowd (*Archives of Pediatrics,* December, 1924) states that persons of all ages may be abnormal or inadequate because of glandular deficiencies. Children of the status thymicolymphaticus type, frequently overweight, sometimes tall, slender and loose jointed, are a difficult problem of adjustment. The nature of their growth and development renders them frequently selfconscious, inadequate, prone to injury, and with a low resistance to infection. They can be assisted more rapidly to a condition of normality by a study of their internal secretions, with the administration of the appropriate glandular extracts, than by neglecting these glands and relying entirely upon measures relating to diet and hygiene and correction of physical defects. Even the cretins are not the simple cases of thyroid deficiency that they have always been considered. They are hypoplastic and their trouble is a pluriglandular one. Such conditions as epilepsy have some relation to disturbances of the internal secretions that warrants further study. Pituitary extracts have a distinctly favorable influence on fatigue and on such symptoms as headache and bedwetting when used in proper amounts and can aggravate the condition if an overdose is given.

Caution must be observed in the use of glandular extracts. Thyroid should be used in small doses, while pituitary whole gland and the anterior lobe extracts can be pushed unless headaches ensue which were previously absent, or the existing one is aggravated. In some cases the enuresis will be aggravated rather than improved if too much extract is given. In addition to the administration of these extracts by mouth, they may be given by injection with benefit in selected cases. Ovarian and testicular extracts are useful where puberty is delayed. Large doses of pituitary extract are not indicated when the sella is small and enclosed, or severe headaches will follow. Rest periods when doses are omitted are necessary from time to time.

It is a temptation for a gland enthusiast to believe that altered internal secretions are responsible for all human ailments, but a mean between extremes is possible and many children can be made happier and more efficient by the proper use of glandular extracts. Standard potent products must be used if success and uniform results are to be obtained. As yet there has been very little standardization in proportion to the vast amount of gland extracts produced.

Suppression of Bile as a Result of Impairment of Liver Function.—D. R. Drury and Payton Rous (*Journal of Experimental Medicine,* May, 1925) state that prolonged chloroform anesthesia causes an acute suppression of bile, as shown by the secretion of a thin "while bile" from which bilirubin, cholesterol, and bile salts are absent. The failure of the liver to secrete bilirubin under such circumstances is not due to failure of the pigment to be formed within the body, as an unusual amount is elaborated after chloroform anesthesia because of blood destruction. The evidence goes to show that bile suppression is consequent upon a functional disturbance of the liver, not upon obstruction to outflow. Even uncomplicated biliary obstruction, as when the common duct is tied in animals otherwise normal, causes a disturbance of the liver cells such that their secretory function is impaired, as shown by the inability to take up and secrete sodium indigotate.

Liver Function in Various Diseases as Tested by the Administration of Levulose.—Reuben Finkelstein and Max Dannenberg (*Journal of Laboratory and Clinical Medicine,* April, 1925) performed the levulose test on thirty-eight consecutive patients. No food was given after the evening meal. Next morning the patient, still fasting, blood was taken and the sugar content determined. Fifty gm. of levulose dissolved in water was given. The blood sugar was again determined at half hour intervals for two hours. The blood in cases one to twenty-six was tested by the Benedict method; in cases twenty-seven to thirty-eight by the Epstein method. The positive and negative results are about equally divided. The nineteen cases in which no increase in blood sugar was observed represent fourteen different diseases; the other nineteen cases representing twelve various diseases gave an elevated blood sugar curve for a period of at least two hours. While the series is rather small for the drawing of conclusions, the test was positive in acute and chronic gallbladder infections in five cases; in icterus, in carcinoma of the pancreas, and in chronic passive congestion of the liver (four cases). The curve was also positive in a few other conditions in which there was no other clinical evidence of hepatic injury.

Adrenalin for Manual Separation of the Placenta.—Robert Joachimovits (*Wiener klinische Wochenschrift,* May 8, 1924) recommends the moistening of the sterilized hand with a solution of adrenalin made up by diluting one c. c. of a one tenth of one per cent. solution of adrenalin with four c. c. of sterile water. The purpose of this procedure is to cause an immediate contraction of the bloodvessels. The uterus does not contract at first, but the hemorrhage stops. This contraction of the bloodvessels minimizes the danger of the penetration of bacteria considerably and the immediate hemostasis is a great advantage. Subsequent contractions of the uterine musculature also aid in the separation of the placenta.

Selective Action of the Suprarenal Cortex Secretion on Mesothelial Tissues.—Robert C. Moehlig (*American Journal of the Medical Sciences,* October, 1924) maintains that the suprarenal cortex secretion has a selective action on the mesothelial tissues. The normal development and continuous normal functioning of the sexual glands and skeletal muscles is dependent upon the normal functioning of the suprarenal cortex. Anterior cerebral defects include the pituitary gland, which in turn are accompanied by suprarenal cortex defects.

Mechanism of Acidosis.—Léon Blum and Maurice Delaville (*Presse médicale,* May 9, 1925) define acidosis as a condition resulting from rupture of the normal acid-base balance due to an increase of the acid valences. Hitherto this disturbance has been mainly considered the result of an increase of the acids, particularly the organic acids. But reduction of the bases may likewise bring about acidosis, and the authors recognize three forms of acidosis, *viz.,* those arising through hyperacidity, through hypoalkalosis, and through both of these conditions combined. These different forms occur clinically. The group of the acidoses through hyperacidity may be further divided into acidosis from excess of ketone bodies, or ketoacidosis, such as occurs in hydrocarbon starvation and diabetes; acidosis from excess of lactic acid, or lactoacidosis, which has been observed after violent and prolonged muscular exertion and probably plays a rôle in some diseases; acidosis from excess of hydrochloric acid, or chloroacidosis, met with in nephritis when elimination of chlorine is defective, and also produced by administration of large amounts of calcium chloride or ammonium chloride; acidosis due to proteins which seize upon bases, or proteinoacidosis, a condition which infiltration permits of demonstrating and which occurs in some cases of heart disease with edema. Acidosis through hypoalkalosis is by no means rare, and is a frequent cause of the acidosis in Bright's disease. The authors found it in two cases of osteomalacia; it may, perhaps, be concerned in the acidosis of rickets. Acidosis through combined hyperacidity and hypoalkalosis is met with in Bright's disease and more rarely in the extreme stages of diabetes.

GASTROENTEROLOGY

Observations on Causes of Gallstone Formation.—Peyton Rous, Philip D. McMaster, and Douglas R. Drury (*Journal of Experimental Medicine,* January, 1924), were able to produce gallstones in fourteen out of twenty-two dogs intubated for the collection of sterile bile. The bile out of which the stones formed was liver bile. Three general types of stones developed, one consisting almost wholly of calcium bilirrhinate, another of calcium carbonate, and a mixed type in which both compounds were present. The experiments demonstrate that gallstones can be formed in the absence of influences to which many authors have accorded a primary importance in their etiology, i. e., infection, stasis, and gall-

bladder activity. They are also not the result of bile loss, for similar stones may be recovered from the wall of glass tubes interpolated in ducts with intestinal connection undisturbed.

In another communication these authors discussed the factors concerned in the genesis of gallstones consisting of calcium carbonate. The evidence they have collected supports the view that the development of carbonate stones in human beings as well as in the dog may be a consequence, not of changes in the bile brought about by microorganisms, nor of the elaboration of an inflammatory exudate rich in calcium salts, but merely of inflammation such as leads to lessened motility of the duct system with the accumulation of organic debris. The fact that infection is almost the sole agent whereby such inflammation is set up and maintained in clinical instances has led too often to the conclusion that it serves as the essential agent in the process of calsification.

Cancer of the Esophagus.—Porter P. Vinson (*Medical Clinics of North America,* January, 1925) states that many physicians advise early, routine gastrostomy in these cases of malignancy. Others prefer radium and x ray treatment, and certain enthusiastic thoracic surgeons advocate resection. Since radium was found not to give relief, the author in his clinic adopted the policy of dilating malignant strictures with sounds just like benign strictures. The stricture is dilated up to 45 F. at the first treatment and the patient is told to return for later dilatations. This is only pallitative treatment. Gastrostomy is unsatisfactory.

However, there are certain types of malignant strictures that cannot be dilated, or in which dilatation fails to afford relief:

1. In cases of cancer of the introitus, with either unilateral or bilateral cord paralysis, metastasis to the cervical glands, and cough, no relief can be obtained by passing sounds. Neither is relief afforded by gastrostomy. Morphin alone gives the patient comfort.

2. If the lesion is essentially gastric, and obstruction is produced by shelving of the malignant growth at the cardia, sounds pass over this mass, and no real stretching is accomplished. Gastrostomy in such cases may result in metastasis to the abdominal wall at the site of the old incision and add permanently to the patient's discomfort.

3. Spontaneous performation into the bronchus or into the trachea makes dilatation inadvisable. In such cases the thread will wrap around the esophageal septum, and the sound cannot be guided, Gastrostomy is then possibly indicated, but should not be urged.

Results with radium have been absolutely disappointing. There are two outstanding dangers with x ray: the patient is incapacitated after treatment by nausea and vomiting, and there is a chance of producing pulmonary fibrosis with respiratory symptoms. X ray treatment is indicated only if the patient is in very good condition. Surgery is purely experimental and should not be advised.

Ninety per cent. of the cases can be diagnosed on the history alone: age beyond forty, progressive and constant dysphagia for a year or less, beginning with solid food, later with semi-solids, and finally with liquids, with or without pain, and without a history of swallowing a caustic. Roentgenography reveals, when positive, a typical picture: a moth-eaten, irregular appearing lesion. There may be a perfectly smooth obstruction; it also shows perforation into the bronchus. The passage of sounds is also helpful in diagnosis. Cancerous strictures can be dilated up to 45 F. without difficulty, which is not true of benign strictures. A specimen may be obtained through the esophagoscope for biopsy.

Appëndectomies at the Lankenau Hospital.—J. B. Deaver and J. A. H. Magoun (*Annals of Surgery,* June, 1924) review a considerable number of cases with the following conclusions: Acute appendicitis is, in the majority of instances, a disease of early adult life, although it may occur at any age. In neglected cases the patients will remain in the hospital from three to five weeks after operation. A purgative should never be given to patients with acute abdominal pain, until inflammation of the appendix is excluded. The mortality in this disease has decreased practically fifty per cent. during the last decade, and while the general increase in knowledge concerning it may partially account for this, it would seem as if the expectant treatment of spreading peritonitis, as described, is also of value. After the peritonitis has localized and a mass is present, the incision as described will be of value in the extraperitoneal approach to the ileum. In practically every case the appendix can be removed. Drainage varies with the situation of the abscess. Cigarette drains and pieces of gauze are commonly used, and occasionally as in pelvic abscess, a glass tube is used. The highest mortality follows subdiaphragmatic abcess or multiple abscesses. If the cecum or ileum is indurated or ulcerated at the primary operation, fecal fistula will occasionally occur. When the appendix, with the abscess lies under the terminal ileum, obstruction may follow. In conclusion, it should be emphasized that prompt diagnosis and appendectomy will do away with many of these serious postoperative complications.

Pancreatic Cysts.—Max Einhorn (*American Journal of the Medical Sciences,* March, 1925) says that the most important symptoms in cases of pancreatic cysts are fulness after meals, gastic distress and vomiting at times. The larger the cyst the more distress is present. The diagnosis of pancratic cyst is not difficult, provided the cyst has assumed considerable proportions and the clinician is aware of such a possibility. The marked features which help to recognize this disease are the following: There is a tumor usually in the left hypochondrium with a smooth even surface, frequently showing fluctuation. The principal protrusion appears to be in the left nipple line beneath the costal margin. The dulness produced by the mass on percussion does not extend to the spleen on the left side, nor to the liver on the right. Changes in the configuration of the tumor are of frequent occurrence, dependent upon the state of the stomach (whether the latter be filled or empty). There is a filling defect in the stomach due to pressure from the outside (recognizable by roentgen rays). Either a very rapid increase in the size of the tumor (within a month or two), or on the other hand a very slow protracted course (several years) is characteristic for a cyst.

In regard to treatment, there is only one course to pursue, and that is to operate as soon as the diagnosis is reasonably made; for without operation the condition usually leads to protracted illness, great suffering, and death. An operation, however, either removal of the cyst or aspiration and drainage after suturing the opened cyst to the abdominal wall—is ordinarily followed by a permanent cure; this occurred in the two cases described.

Carcinoma and Sarcoma of the Esophagus.—It was stated many years ago by Chevalier Jackson (*American Journal of the Medical Sciences,* May, 1925) that the mortality of malignant disease of the esophagus was, at that time, one hundred per cent. Notwithstanding the great advances made in the surgery of malignancy elsewhere in the body the ultimate prognosis of esophageal cancer remains the same today. There is every reason to believe, however, that the reason for this is that the surgeons have never had a chance to develop the technic of a curative operation because the diagnosis is never made early. The reason why the diagnosis is never made early is that the textbooks and journal articles give chiefly or exclusively diagnostic methods that are always negative early in the disease. When the time comes in which esophagascopy shall be resorted to promptly on the appearance of certain very vague symptoms there is ample justification for the belief that the surgeon will cure a good percentage of patients. Squamous celled endoesophageal carcinoma is not an aggressive type of malignancy. On the contrary, it is a mild, slow and, for a long time, purely local process.

Under palliative treatment, if the patient is never permitted to be short of an abundance of water and a full allowance of properly balanced food elements, in most cases the patients will survive at least two years from the onset of the disease, and some have survived as long as five years. One lived six years. Patients running the gauntlet of late inferential diagnosis, and leading a precarious existence of various degrees of food and water starvation, depressed and acidotic, on a diet of intermittent supplies of raw eggs and meat broths, may not survive more than a year from the probable time of the onset of the disease.

The bougie as a diagnostic means is not only dangerous, but it is inconclusive because inferential; and it is always hopelessly late. A cancer must be well advanced before it will stop a bougie. Even fatal cancer of the esophagus may not be obstructive. The bougie as a therapeutic measure hastens death either by perforation or by increasing metastases. As stated by Da Costa, "no surgeon would stretch a cancer." As stated by Shallow, "no surgeon would

forcibly dilate malignant stricture of the esophagus any more than he would forcibly dilate cancer of the rectum."

There are only two means by which an early diagnosis of esophageal malignancy can be made, namely: Röntgen ray examination, and esophagoscopy. All other means are late, inconclusive, and some of them dangerous. By esophagoscopy endoesophageal cancer can be diagnosticated not only early, but with the absolute certainty essential to getting the consent of a comparatively well man to an operation he may not survive. Endoesophageal cancer can be diagnosticated just as early, just as quickly and just as certainly as cancer of the cervix if an opportunity for esophagoscopy is afforded early.

RESPIRATORY TRACT

Blood Plate Counts in Pulmonary Tuberculosis.—R. G. Bannerman (*Lancet*, September 20, 1924) found that the blood plates are generally present in excessive numbers in active pulmonary tuberculosis, and that, broadly speaking, the more serious the clincal condition the greater is the degree of thrombocytosis. In some cases, where repeated counts have been made at intervals, a change in the number of plates has occurred. When the change is in the direction of the normal, it has coincided with an improvement in the clinical condition, where as a movement in the opposite direction, or the persistence of a high plate count, has been associated with progression of the disease. On the other hand, the maintenance of a normal plate count points to stability. More prolonged observation is required to determine the more precise relations between thrombocytosis and the stage of the disease, but it is already apparent that there is no necessary correspondence between the number of plates and such features as pyrexia, the anatomical extent of the disease, or the presence of tubercle bacilli in the sputum. It appears rather that there exists an inverse relation between thrombocytosis and the subject's resistance to the disease; it is suggested that the plate count may afford a means of measuring that somewhat indefinite entity, which is the basis of prognosis.

Autohemotherapy in Essential Asthma.—L Rimbaud (*Bulletin de la Société des sciences médicales de Montpellier*, November, 1923), reports the case of a woman aged thirty-three who had been suffering from asthma for two and a half years, the disorder having begun in the seventh month of pregnancy. For the last year the attacks had been recurring generally once a week, and regularly at the menstrual periods. A variety of organic products and vaccines, together with iodides, lobelia, digitalis and cacodylates had been tried without appreciable result. Clinical evidences were against the existence of tuberculosis. The patient was sensitive to new mown hay. Ten mils of blood were withdrawn from a vein at the bend of the elbow and reinjected in the gluteal region. Nine more such injections were given at weekly intervals. The first two injections were followed on the next day by some lassitude and a slight attack of dyspnea. In the succeeding four months, however, up to the time of writing, she had not had a single asthmatic attack.

Pleurisy of the Hilum Region.—H. Swanberg (*Surgery, Gynecology and Obstetrics*, April, 1924) gives a report of a case and the following conclusions. Pleurisy of the hilum region can be successfully diagnosed only by a combination of a careful history with a roentgenological study. Without a careful history the increased hilum shadow might be interpreted as a mediastinal tumor, glandular masses, or limited pulmonary lesions. Because of the fetid odor such cases may simulate pulmonary gangrene. However, in pulmonary gangrene, the fetid odor precedes the expectoration, stethoscopic signs are more important, and the general condition is more serious.

Nontuberculous Pulmonary Abscess.—W. Whittemore (*Surgery, Gynecology and Obstetrics*, April, 1924) says that it is important for the surgeon performing operations on the upper respiratory tract under general anesthesia to bear in mind the danger of lung infection and arrange his technique so as to avoid this complication. From ten to thirty per cent. of the cases may be expected to be cured by expectant treatment. Artificial pneumothorax may cure a very small number of cases. It should be used only in those cases in which the lung and costal pleura are not adherent. It is an excellent means of determining whether or not adhesions are present. Bronchoscopy may cure a very limited number of cases if treatment is established early. Surgery offers an excellent chance for cure in those cases in which other methods of treatment have failed or are unsuitable.

Value of Physical Signs in the Early Detection of Pulmonary Metastases.—Lloyd F. Craver (*American Journal of the Medical Sciences*, June, 1924) says that it is essential to search carefully for the presence of metastases before planning the treatment of malignant neoplasms and describes the physical signs of early as well as late stages of metastasis to lungs and pleura in two typical types of malignant neoplasms in which such secondary growth frequently occur, mammary carcinoma serving as an example of carcinoma, and osteogenic sarcoma as one of sarcoma. The earliest physical sign of metastasis to pleura or lung from breast carcinoma is a patchy limitation of breath sounds, particularly during inspiration, which may or may not be accompanied by crackling rales or pleural friction rubs. It may be detected in some instances before the röntgenologist is able to demonstrate any shadow distinctive of metastasis. The later signs correspond to those described in textbooks. The earliest demonstrable physical signs of chest metastasis of osteogenic sarcoma may not appear until some time after the röntgen ray has succeeded in showing the small, round, well circumscribed nodules.

Artificial Pneumothorax.—L. S. T. Burrell (*Lancet*, July 26, 1924) maintains that artificial pneumothorax should be regarded not as a cure for tuberculosis of the lung, but as a safe method of resting the diseased part, and it should be used in conjunction with other methods of treatment. The success of the treatment is largely dependent on really keeping the lung at rest, taking each case individually and arranging the dosage and intervals between the refills according to the peculiarities of the individual patient.

NEUROPSYCHIATRY

Staphylococcus and Streptococcus Meningitis.—W. E. Dandy (*Surgery, Gynecology and Obstetrics*, December, 1924) advocates early continuous drainage of the cisterna magna for the treatment of meningitis in which the infecting organism is staphylococcus and streptococcus. This method is not urged in other forms of meningitis because it is felt, though not proven, that the character of the inflammatory exudate would probably make drainage impossible.

Meningocerebral Adhesions.—W. G. Penfield (*Surgery, Gynecology and Obstetrics, December*, 1924) has found, from a histological study of the result of cerebral incision and cranioplasty, that after a simple brain wound active phagocytosis continues over a long period and with it progressive disappearance of brain structure. Neurones adjacent to such an area of rarefaction may show chromatolysis as late as seven months after operation. Between normal brain structure and such rarefaction is found a brush work of neuroglia cells and sometimes a limiting layer of neuroglia fibrils. In the cavity is found a loose connective tissue network. Deep adhesions are composed of connective tissue threads attached to dura, or its substitute, and to the glia brushwork at the bottom of the brain wound. Superficial adhesions result from slight injury and extend some little distance over the surface of the brain from the point injured. These adhesions are composed of an interlacement of connective tissue fibrils from the dura, with the fibrils of a superficial gliosis. The thickness of the new or adventitious dura, formed after removed of the old, varies according to the available blood supply. Movement and foreign bodies are also factors to be considered. The dura is thick after a decompression operation and thin beneath a bone flap.

Placement of the least irritating foreign bodies, as celloidin, on the surface of the brain causes a very thick, hard connective tissue envelope to form all about it. The results are the same even when there is no wound of brain and when the foreign body lies beneath a relatively nonvascular bone flap. The layers of this envelope form a bursalike cavity preventing direct adhesion to the scalp or skull. Adhesion between brain wound and lower layer of the envelope forms, of course, as well as adhesion between upper laver and skull or scalp. Transplantation of various tissues to the surface of the brain is followed by rapid growth of a layer of fibroblasts above and beneath the transplant. Such procedures are useless if their purpose is to prevent adhesions, for fibroblasts grow wherever the wound. Thus the transplant is incorporated in the adhesion conditions are suitable as do organisms in a contaminated of brain to its covering.

GYNECOLOGY AND OBSTETRICS

Vagotonia in Pregnancy.—By means of injections of epinephrine, L. C. Louros (*Zentralblatt für Gynäkologie,* August 30, 1924) was enabled to produce a continually increasing hyperirritability of the vagus nerve in preganancy. The hypofunction of the sympathetic nerve produces a lowering of the blood pressure. The paradoxical increase of the pressure is produced by local changes in the blood vessels by substances manufactured during pregnancy. The author maintains that the injections should be given subcutaneously and that the resulting blood pressure curve may be regarded as an index of the vagotonia of pregnancy.

Is the Kielland Forceps an Axis Traction Forceps?—Hans Heidler (*Zentralblatt für Gynäkologie,* August 16, 1924) calls attention to the fact that the great point of differentiation of the Kielland from other types of forceps is the fact that the former has no pelvic curve and therefore it can be applied biparietally in the pelvic inlet. Aside from this it fulfills all the demands made on an axis traction forceps. The evidence for this is seen in röntgenograms, which show that the lock of the forceps pushes the coccyx backward and consequently the direction of the traction is more in a backward direction than in the usual type of forceps.

Treatment of Disturbances of the Third Stage of Labor.—If the placenta does not descend within half an hour, Hans Heidler (*Wiener klinische Wochenschrift,* August 14, 1924) injects three hundred c.c. of sterile physiological sodium chloride solution into the umbilical vein. If this procedure does not produce the desired result, the injection may be repeated twice, if necessary at intervals of half an hour. If this maneuvre is unsuccessful, pituitary extract or ergot may be injected. Manual removal of the placenta is the last resort. If done early, under aseptic precautions and in an uninfected woman, this interference is not as dangerous as is generally assumed. If this operation is done during the febrile stage in an infected woman, or if the uterus is examined within a few days after the delivery, the result is usually fatal.

Pyelitis of Pregnancy.—E. Klaften (*Zentralblatt für Gynäkologie,* August 9, 1924) mentions the following symptoms of the pyelitis of pregnancy: High fever and pains in the region of the kidney with muscular rigidity, so that it may be confused with appendicitis when it occurs on the right side. Of thirty-three patients, sixteen showed nothing abnormal clinically or bacteriologically and the rest, subjectively normal at times, showed leukocytes and colon bacilli in the urine. The colon bacilli are also found in the lower two thirds of the vagina, from which they may be made to disappear after injections of lactic acid. These injections constitute a part of the treatment, which consists mainly in the use of urotropin. A forty per cent. solution of urotropin is injected intravenously in amounts of five to ten c.c., which dose may be repeated after twelve hours and again twice on the second day, provided the bladder is not irritated. The patient is given nothing or almost nothing to drink, kept in bed and should be made to lie prone or on the side of the healthy kidney. A milk diet is ordered and laxatives are indicated. About five days after the retrogression of the acute symptoms one gram of urotropin is given by mouth three times daily, possibly reenforced by ten drops of diluted hydrochloric acid. In obstinate cases the pelvis of the kidney may be irrigated. The interruption of pregnancy is indicated only in patients with one kidney.

Sedimentation of Erythrocytes Test in Obstetrics and Gynecology.—Béla Falta (*Zentralblatt für Gynäkologie,* July 5, 1924) draws the following conclusions: The increased rapidity of sedimentation of the erythrocytes is a constant sign of pregnancy after the fourth month. The rapidity of the reaction increases with the progress of the pregnancy, reaching its highest stage during the delivery. Owing to individual variations the terms of pregnancy cannot be determined. During the first eight to ten days of the puerperium, the values were found to be the same as during labor; subsequently it is diminished, to return to normal after the course of three weeks. The rapidity of the sedimentation is strikingly increased in beginning or threatened abortion, just as in hemorrhages of postpartum endometritides. In adnexal inflammations the rapidity of sedimentation is markedly increased, but in cases showing the presence of virulent germs it is normal. This test can be used in the differential diagnosis between ectopic pregnancy and adnexal tumor only with the most accurate consideration of all the other factors. In benign tumors the rapidity of this test is normal in contrast to the malignant tumors, in which it is markedly increased. In many cases of carcinoma this reaction appears to run parallel with the extension of the disease, but not regularly so. It indicates recurrences very early.

Limits of Control by Sense of Feeling of Intrauterine Use of Instruments.—Hugo Sellheim (*Zentralblatt für Gynäkologie,* July 5, 1924) says that the sensations imparted by the uterine sound, placenta forceps and curette may be misleading. The utmost care is necessary and the curettage should be repeated in clinically suspicious (carcinoma)' cases of hemorrhage at the climacterium. Ergotin and pituitrin should be given in a preliminary way before treating abortions so that the uterus may contract with the progressive emptying of the uterus. The placenta forceps has no advantages over the finger as it does not reach beyond the nondangerous area reached by the finger.

Placenta Accreta.—J. O. Polak and G. W. Phelan (*Surgery, Gynecology and Obstetrics,* February, 1924) offer the following conclusions:

1. In our series the incidence of placenta accreta is about one in six thousand cases.
2. There is considerable confusion in the minds of the profession between simple adhesion of the placenta and true accreta.
3. Accreta is a definite pathological entity.
4. Manual removal is impossible and can only result in hemorrhage, sepsis, or perforation.
5. Every delayed placenta with no hemorrhage should be viewed with suspicion; and no attempts at Credé's method should be made if the clinical signs of separation are not present.
6. In the presence of an attached placenta without bleeding, aseptic exploration under anesthesia should be made to determine the subsequent procedure.
7. Finally, if no line of cleavage can be demonstrated, hysterectomy should be done.

Prolonged Rest in the Horizontal Position a Fertile Cause of Puerperal Sepsis.—Henry Corby (*British Medical Journal,* September 27, 1924) is impressed by the fact that puerperal sepsis is almost unknown among women in the slums in spite of their contempt for the belief that ten days to two weeks of rest should be taken after a confinement. These women often do their regular household duties as early as the third day after labor.

Nature's methods of defending the organism against bacterial infection are the following: In the first place there is the vaginal bacillus, which is an efficient sentinel against pathogenic bacteria entering the vagina. During labor the rush of amniotic fluid tends to flush out any bacteria that may be present. The downward passage of the child's body during delivery tends to brush them out firmly. The expulsion of the secundines produces a similar result, and the afterbleeding helps to complete the work.

The arguments advanced against early rising of the patient include the possibility of pulmonary embolism. But this is rare and, besides, it depends upon the suddenness of the change in position. The second argument is the occurrence of prolapse of the uterus from relaxation of the uterine ligaments, and this is also rare among these women. Besides, during the puerperium the uterus has no need for the suspensory ligaments and its bulk gives it support from the surrounding structures. The bugaboo of uterine displacements and resulting abortion is also put out of the way by the actual rarity of this occurrence among the women living under poor conditions.

Judging by the energetic efforts of Nature to get rid of noxious bacteria, the lochia must also wash out a large number of the pathogenic germs. Retained pieces of the secundines are more readily expelled in the upright than in the recumbent position. Furthermore, the lochia retained in the uterus interferes with adequate involution of the uterus in the recumbent position, thereby favoring sepsis. The author instructs his patients to sit up at stated intervals in bed and favors early rising after the confinement.

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

EMPLOYER'S LIABILITY FOR MEDICAL TREATMENT

The New York Appellate Division holds, Balderson v. Wallace and Co., 208 N. Y. Supp. 543, that under section 13 of the Workmen's Compensation Law, prior to its amendment in 1922, an employer was not liable for medical treatment and nursing furnished more than sixty days after the injury where this was not required by the State Industrial Commission and the employer given the opportunity to furnish it by suitable persons of its own selection. The amendment of 1922 strikes out the provision as to the requirement of such treatment by the commission, and makes liability therefor by the employer depend on "the nature of the injury or the process of recovery," without limitation as to time. But this amendment is not retroactive.

SEPTICAEMIA FROM TOUCHING DEAD BODY NOT COMPENSABLE

The New York Appellate Division holds, Connelly v. Hunt Furniture Co., 207 N. Y. Supp. 695, that death from septicaemia resulting from touching a gangrenous body which the deceased employee was preparing for burial was not compensable under the Workmen's Compensation Act. "The contact made was intended to be made, and did not involve an occurrence or happening, sudden or unexpected. Moreover, the contact was not in itself an injury. There was no traumatism and no immediate physical hurt."

PNEUMONIA CONTRACTED WHILE WORKING IN ICEBOX NOT AN ACCIDENT

The New York Appellate Division holds, D'Oleveri v. Austin, Nichols & Co., 211 App. Div. 295, 207 N. Y. Supp. 699, that pneumonia, contracted by a food packer while working in an icebox in a storage warehouse was not compensable as an accident. "The hazard, if it might be so called, was a continuous one, known fully to the claimant, and his act a voluntary one; therefore not accidental, and referable to no moment of time which was definite."

MISSISSIPPI PRIVILEGED COMMUNICATIONS STATUTE

The Mississippi Supreme Court holds, Dabbs v. Richardson, 102 So. 769, that, under the state statute, a physician is not a competent witness to testify as to facts and information received by him in his capacity as a physician. He is a competent witness to testify, in proceedings to probate a will, concerning the mental condition of the testator, though he was his physician, if his information is derived from social or business relations and not by professional relations. But where his knowledge is derived partly from his relation as a physician and partly from social and business relations, it is held that the trial judge may determine his competency in view of all the evidence, and if it appears that his information as a physician influenced his judgment, the judge may exclude his evidence from the jury.

OSTEOPATH CANNOT PRACTISE OPTOMETRY IN KANSAS WITHOUT REGISTERING

The Kansas Supreme Court holds, three judges dissenting, State v. Eustace, 233 Pac. 109, that a registered osteopath is not entitled to practise optometry in Kansas without registering as an optometrist in the manner required by law. The court says that osteopathy when practised by a physician or surgeon as defined in section 65-1005 Kansas Revised Statutes "may be and probably is a part of the art or science of healing, but the practice of osteopathy, while it may be a part of the art of healing, is not comprehended within the term 'practising medicine,' nor within the term 'surgical operation' as used in section 65-1005 of the Revised Statutes. Section 65-1508 of the Revised Statutes, providing that nothing in the optometry act shall be construed as preventing regular registered physicians and surgeons from practising optometry, does not include those who are registered to practice osteopathy."

ESTABLISHMENT OF CORPUS DELICTI IN MURDER CASES

The California courts hold, People v. Clark, 233 Pac. 980, that, in a murder case, the general rule requiring either the production of the body of the person supposed to have been murdered or some circumstance from which death would necessarily follow cannot be applied in all cases. "If the circumstances surrounding the disappearance of the alleged victim be such as to convince the mind to a moral certainty as to his death, the demands of the law will be satisfied. Nor is it necessary in establishing the corpus delicti that the means by or through which such death resulted be established beyond a reasonable doubt." But the California cases hold that the corpus delicti must be established without the aid of any admission by a defendant.

JUDICIAL NOTICE THAT MORPHINE SULPHATE IS NARCOTIC

The Oklahoma Criminal Court, Barr v. State, 231 Pac. 322, takes judicial notice of the fact that morphine sulphate is a narcotic drug, as defined by section 8886, Okla. Comp. Stat., 1921, and that the dose varies from one twelfth to one half of a grain.

QUALIFICATION AS MEDICAL EXPERT WITNESS

In a murder prosecution, where it was alleged the deceased was killed by arsenical poisoning, it was contended that a medical witness for the prosecution who gave an opinion as to the cause of death was not shown to be an expert, because "there was no qualification with regard to experience in connection with poisoning cases or arsenical poisoning prior to the admission of this evidence." It was held, People v. Potigian, (Cal. App.), 231 Pac. 593, that "a physician may testify as an expert, touching cause of death, basing his opinion upon special knowledge acquired from professional study, even though he may have had no practical experience in cases of the kind concerning which he testified."

FOUNDATION FOR DYING DECLARATIONS

The New Mexico Supreme Court holds, State v. Stewart, 231 Pac. 692, that a dying declaration is admissible in evidence only when it is shown that the declarant was conscious of the approach of death at the time it was made; and where the only evidence of such consciousness on the part of the declarant is the character of the wound and the state of his illness, such a declaration cannot be admitted, where all the surrounding facts and circumstances indicate that no such consciousness existed.

REFUSAL TO SUBMIT TO MEDICAL AND SURGICAL TREATMENT

The Oklahoma Supreme Court, Chicago Bridge & Iron Works v. Sabin, 237 Pac. 851, holds that where an employee is injured and claims compensation under the Workmen's Compensation Act, and receives it up to and including the date when he should have been cured had he submitted to medical and surgical treatment in no manner endangering life in the slightest degree, or causing pain, he cannot recover compensation for increase of disability due to his failure to accept such treatment and use ordinary care to avoid aggravating the injury.

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Diagnostic Value of X Ray Examination of the Gallbladder After the Intravenous Injection of Tetraiodophenolphthalein*

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In the past the röntgenographic study of the gallbladder has been limited to finding gallstones in about fifty per cent. of the patients who had them, and when the hollow viscera were filled with a contrast fluid, in noting the effects of adhesions resulting from pericholecystitis. At times that which appeared to be the shadow of the gallbladder was interpreted as a hyperplasia of its wall. Only when the x ray findings were positive for gallstones, have these observations been of value to the clinician.

In reference to the gallbladder, the problem to be solved may be stated under three headings. First, is the gallbladder the primary seat of infection or secondary? Second, are gallstones present or absent? Third, does the gallbladder function properly?

In solving the first portion of the problem, the differential diagnosis must be studied. A number of cases in the series forming the basis for this paper had a complete abdominal x ray examination and chronic appendicitis was found in six of the cases, duodenal ulcers in three, and in all of these patients the gallbladder behaved normally. When indefinite symptoms are present, the urological tract should be examined to eliminate the possibility of renal calculi, growth and obstruction of the right ureter. The ileocecal region should be observed, especially for alterations in motility, as the ileocecal reflex plays an important part in referring symptoms to the pyloric region of the gastrointestinal tract. The duodenal and gastric regions should also be carefully studied.

If by the direct examination gallstones are found, this solves the second portion of the problem.

After excluding pathological conditions outside of the gallbladder and gallstones by the direct method of x ray examination, there remains a large group of cases in which the character of the functioning of the gallbladder must be determined.

Considering the frequency of gallbladder disease, it seems remarkable that until recently so little research work has been done on the study of the physiology of this organ. The old slogan that gallstones represent the terminal stage of infection and therefore all patients having gallbladder disease require surgical drainage or cholecystectomy, has been exploded, because in many patients in whom the primary results were good, after a limited period of time the old symptoms recurred. To determine the cause of the postoperative symptoms, intensive study has been made which has opened the field for a better understanding of gallbladder function. The unfavorable results of operations are found to be due in part to infections of the biliary ducts, or because the sphincter of Oddi would not close, and thus the normal physiological balance and rhythm which exist between the mechanism of the gastric pyloric sphincter, the sphincter of Oddi, and the contraction of the gallbladder, are lost, so that the liver keeps up a continuous flow of bile, and serious digestive disturbances occur. This does not happen in every case for in those patients in whom the sphincter of Oddi continues to function after the removal of the gallbladder, the biliary and common ducts may distend, and as they are lined with columnar epithelium similar to that which form the gallbladder mucosa, the function of concentration of bile salts is here continued.

The function of the gallbladder may be better understood by briefly stating some of the observations made by Mann of the Mayo Clinic in Rochester, Minn., in the study of the mechanism of the function of the gallbladder by animal experimentation.

Mann introduced a tube into the gallbladder of an animal and another one into a biliary duct. By attaching these tubes to a mercury column he was able to measure variation in pressure. During gastric digestion, the pressure from the gallbladder was lowest, and after gastric digestion was completed the pressure gradually increased. From this observation the deduction is made that the gallbladder empties during gastric digestion and fills during the fasting stage. When concentrated bile salts from one animal were introduced into the duodenum of the animal with a tube in a biliary duct, there was a marked increase in the flow of bile from the liver. Therefore it seems that concentrated bile salts stimulate biliary secretion. Since gallbladder bile has a greater concentration of the bile salts than the hepatic bile, Mann formulated the hypothesis that a chemical reaction takes place when concentrated bile from the gall-

*Read at Atlantic City, before the American Academy of Physiotherapy, May 25, 1925.

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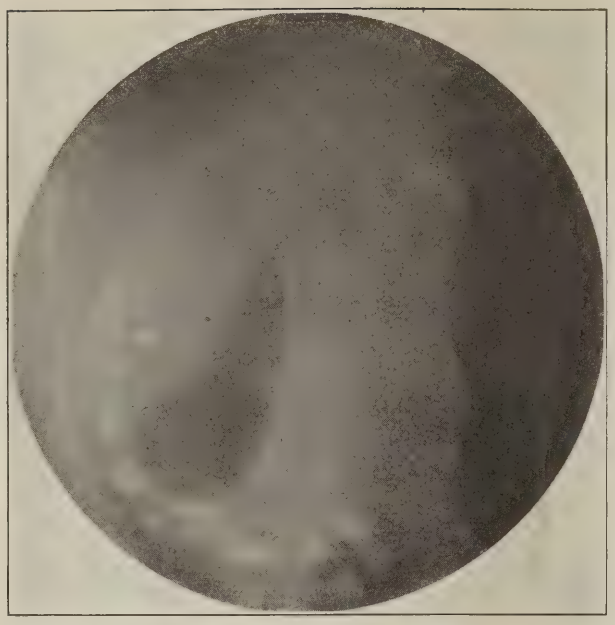

Fig. 1.—Attachment of body and neck of gallbladder to liver.

Fig. 2.—Kinking of lumen as it passes over hepatic ligament.

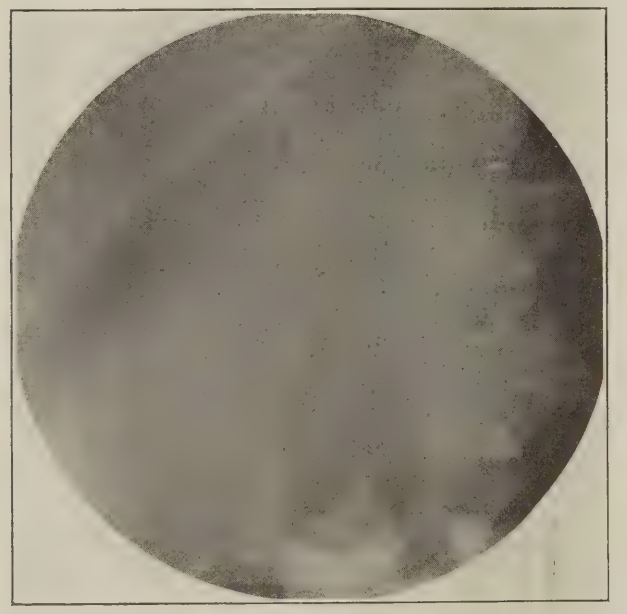

Fig. 3.—Emptying of gallbladder by Lyon's method.

Fig. 4.—Fifteen minutes after bile started to flow from Jette tube.

bladder comes into contact with duodenal secretions, forming a hormone similar to the hormone known as duodenal secretion, which stimulated pancreatic secretion, or to the gastric secretion which stimulates the flow of gastric secretion. This hormone is taken up through the duodenal mucosa into the blood stream and acts directly upon the secreting cells of the liver.

Another important observation was made by Mann which was that when rose benzol, a red dye, was injected intravenously into the animal with the tube in the gallbladder, the bile from the gallbladder was mixed with a large quantity of this dye, and when the cystic duct was ligated a small quantity of the dye was recovered from the gallbladder. The deduction here is that the gallbladder has the power of taking substances from the circulation and secreting them into its cavity.

A Japanese observer, Matsuo, opened the abdomen of an animal and injected azarubin S into the gallbladder. He then by the method of Lyon relaxed the sphincter of Oddi and saw the gallbladder rapidly diminish in size, and was also able to reclaim bile mixed with dye through the duodenal tube. This observation seems to establish the statement that there is a reflex action between the sphincter of Oddi and the emptying of the gallbladder.

From the observations of these men and others it appears that the gallbladder has a definite function which is to establish the activity of the biliary secretion during gastric and duodenal digestion, and that the mechanism of this function is regulated by a reflex stimulation which empties the gallbladder when the sphincter of Oddi is relaxed.

In the light of these facts, before starting x ray examination for a study of the gallbladder condition,

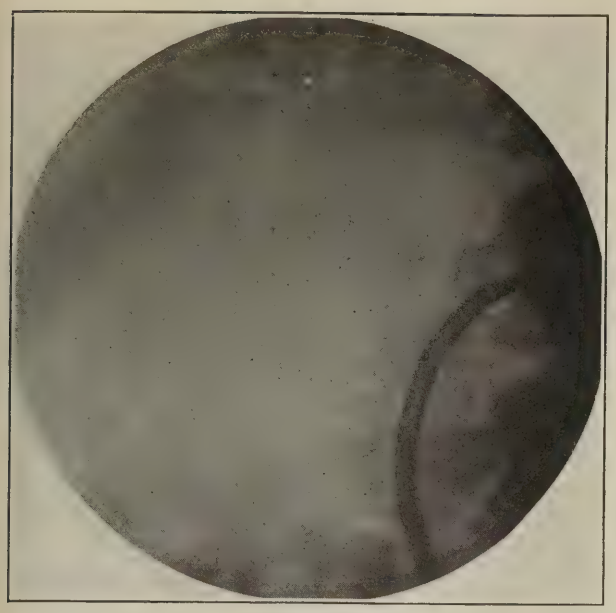

FIG. 5.—Plate made fifteen minutes after Fig. 4.

FIG. 6.—Plate made after draining gallbladder for forty-five minutes.

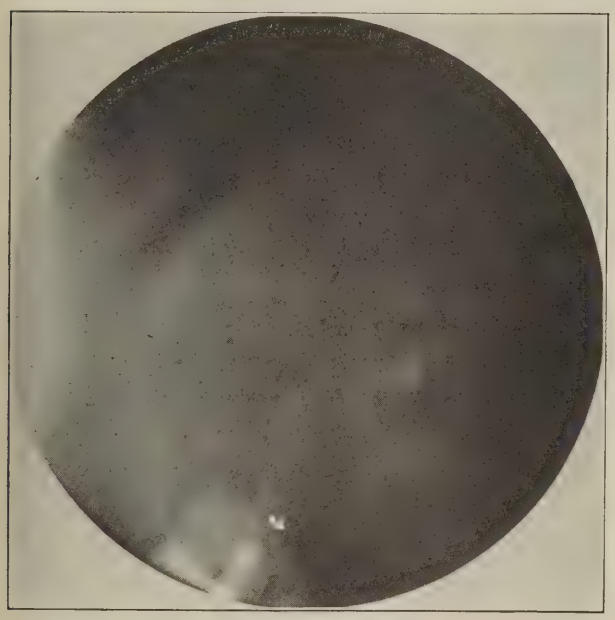

FIG. 7.—Common duct obstruction. Gallbladder injected with tetrabromphenolphthalein; did not appear in gallbladder.

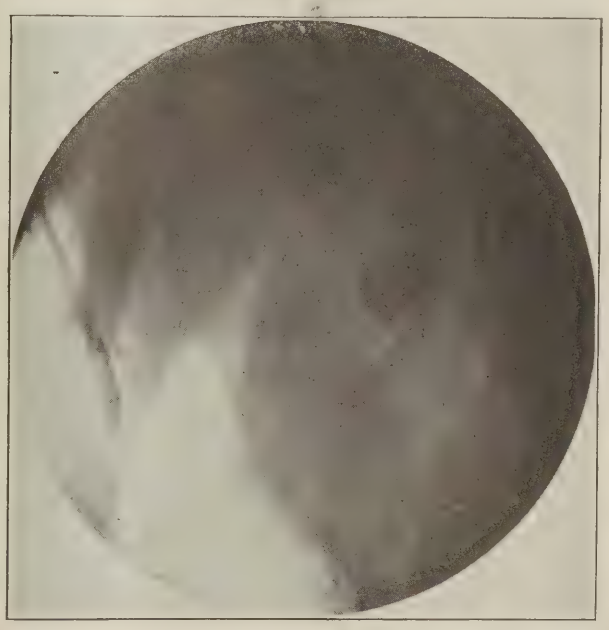

FIG. 8.—Cystic duct obstruction. Gallbladder injected with tetrabromphenolphthalein; did not appear in gallbladder.

certain preparations for the patient are necessary. No food must be taken into the stomach for a period of six to twelve hours. This is to insure the closing of the sphincter of Oddi and the storing of bile in the gallbladder. The usual cleansing of the colon of fecal matter and gas is essential for clear shadows.

Graham and Cole, of St. Louis, introduced the use of tetrabromphenolphthalein for visualization of the gallbladder. The phenoltetrachlorphthalein was first used by Orndorff and Black as a chemical test of liver function, but the specific gravity of this salt is not high enough to cast a shadow to x rays in contrast to that of the soft structures. Tetrabromphenolphthalein when injected into the vein in strengths of 0.1 gm. per kilogram of body weight, is eliminated into the bile by the liver and appears in the gallbladder in sufficient density to cast a definite shadow to x ray projection.

Whitaker and Milliken substituted for the bromine salt, tetraiodophenolphthalein. Because of its greater atomic weight this may be used in smaller quantities and produces a shadow as dense to the x rays as the bromine salt. It has about the same toxicity as the bromine salt but as it is used in smaller doses there is less reaction following its injection.

All of these salts are irritating to the veins and great care and caution must be exercised in their use. Of course, the usual aseptic methods employed in surgical procedures must be followed. To prevent necrosis, none of the fluid must be permitted to enter the tissues around the vein. Unless the vein is carefully washed after the introduction of the dye thrombosis is likely to result. However, if the intravenous injection is skillfully given, these local disturbances will be greatly minimized. There are many toxic symptoms which sometimes occur. Very

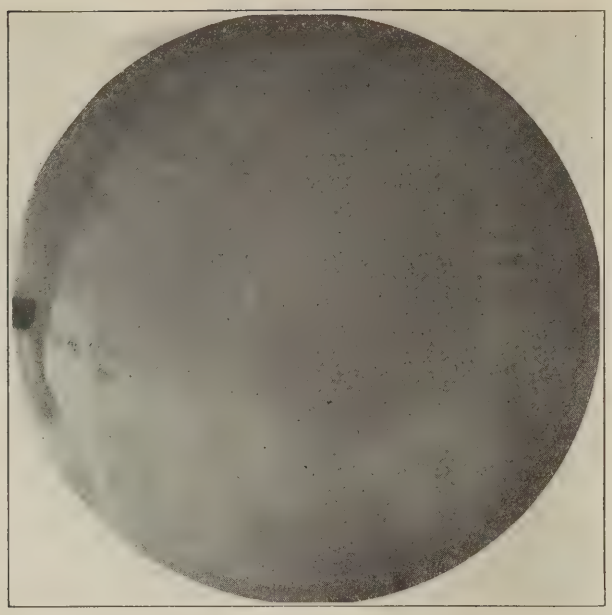

Fig. 9

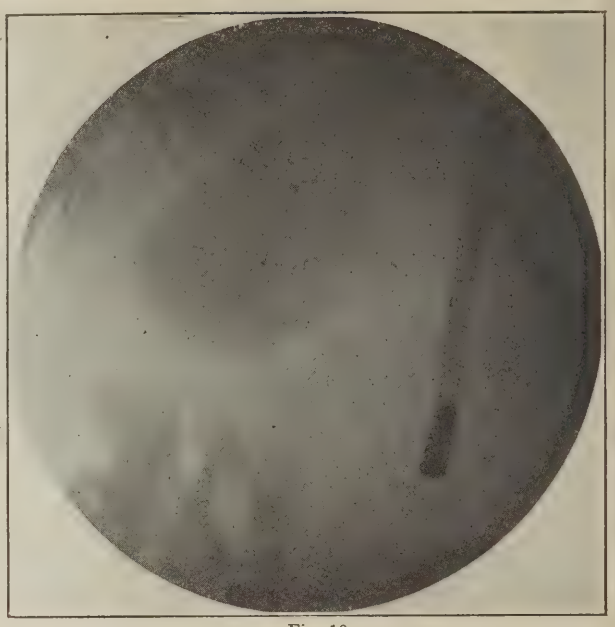

Fig. 10

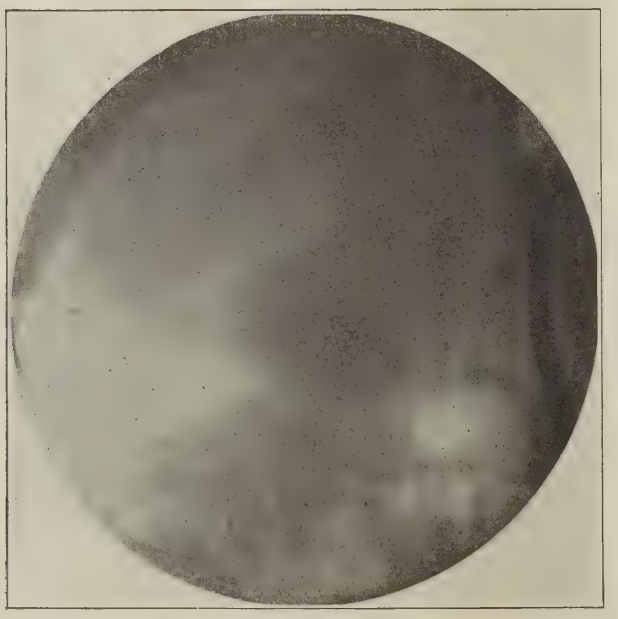

Fig 11

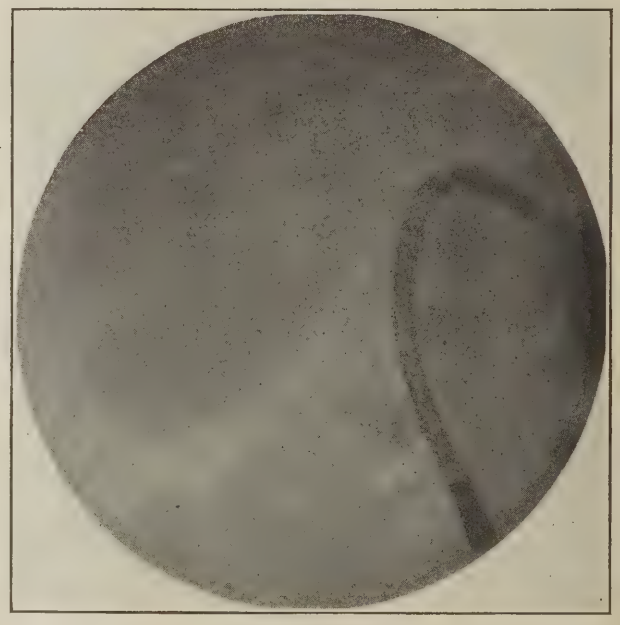

Fig. 12

Figs. 9, 10, 11, and 12.—Showing a gallbladder which failed to empty to stimulation of the sphincter of Oddi with magnesium sulphate, peptones, or olive oil. The film made thirty hours after the injection, and after three full meals showed as much of the dye stained bile in the gallbladder as was present at the eight hour examination. A diagnosis of spasm of the cystic duct was made. Subsequently this patient had an attack of appendicitis, and an appendectomy was performed. At the time of the operation the gallbladder was pronounced normal, and since the operation the patient has been free from symptoms referred to the gallbladder.

severe reactions have been reported, but so far all the patients have recovered. Many have no reaction whatever, but when we consider that patients with diseased gallbladders have very poor function of this organ and hence delayed elimination of the salt, reactions must be expected. Usually these are limited to pain in the back, headache, and nausea, but sometimes vomiting and stimulation to micturition and defecation will occur. A few cases of collapse have been reported. This seems to be due to the marked lowering of the blood pressure.

Menees and Robinson first advocated the oral administration of sodium tetrabromphenolphthalein asserting for this method the convenience of administration and diminution in amount of discomfort.

The method of raying is important. Control films are made before the dye is injected. If by the end of one hour the patient has sufficiently recovered from the reaction films are made, and when necessary the examination is continued hourly, for a period of eight or ten hours, depending upon conditions found. Before concluding that the dye has not appeared in the gallbladder, it is necessary to divide the right side of the abdomen into four or six areas and make an exposure of each of these areas. Because the secondary radiation may obscure a gallbladder shadow, when it contains but a small quantity of the dye, the results shown by one large film covering this entire area are not conclusive.

Anatomically, the gallbladder may be divided into

the fundus which is surrounded by peritoneum, the body and the neck. The last two are fixed to the under surface of the liver by folds of the peritoneum. If the body and neck are completely surrounded by the peritoneum, this will act as a mesentery and permit the gallbladder to find a lower position in the abdomen. The neck of the gallbladder is narrow and sometimes contains a dilated portion known as the ampoule of the gallbladder. The cystic duct is S shaped, and the mucosa and submucosa form folds which are diagonally situated forming a sort of screw effect which delays the filling and emptying of the gallbladder.

Owing to the fact that the examination is started six to twelve hours after the last meal, the gallbladder should be filled with bile. In many cases within a half hour after the injection of the dye the outline of the shadow of the gallbladder appears. It would seem, therefore, that some of the dye is taken up from the blood stream in the cystic circulation and secreted into the bile filled gallbladder cavity. In many cases the gallbladder appears at its greatest size at the end of four hours. Eight or ten hours after the injection the shadow of the gallbladder is smaller and denser. It would seem, therefore, that not only more dye enters the gallbladder, but that the fluid is absorbed so that the concentration of bile salts is being accomplished. This change in the size of the shadow of the gallbladder is an observation which should be made to determine the elasticity of its walls, because concentration of the bile salts cannot take place if there is a marked hyperplasia of the gallbladder wall. This increase in size may not appear before eight or ten hours after injection. A large sized gallbladder observed early in the course of the examination does not mean that the gallbladder is dilated. In order to establish this diagnosis it must remain dilated over a considerable period of time. A marked diminution in the size of the gallbladder throughout the examination, should be interpreted as a hyperplasia of its wall, but it may also be due to an open sphincter of Oddi which prevents the storing of much bile in the gallbladder.

After a full meal and when gastric digestion is well established, there should be a marked decrease in the size of the gallbladder. Twenty-four hours after the injection and after two meals, usually a trace of the salt remains in the gallbladder.

If the injection is properly given and the films are of good quality and made in a half second exposure or less, and no shadow of the gallbladder appears at any time during the twenty-four hour examination, a diagnosis of cystic duct obstruction may be made. This obstruction may be due to stricture, stones in the duct, or such a complete filling of the bladder with stones that the dye cannot enter.

In one case of the series no dye or bile left the gallbladder for thirty hours. The sphincter of Oddi was relaxed by Lyon's method but the gallbladder did not empty. There was no reduction in the amount of contents after meals. This condition may have been due to spasm of the cystic duct. To establish the correctness of this interpretation the observation will require repetition and further study.

To summarize, even though the gallbladder seems to be the seat of disease it is important to exclude pathology in other portions of the abdomen. This examination does not therefore in any way take the place of the usual x ray study of the abdomen by the use of contrast meal, and the direct method of projecting the shadows of the solid organs.

The advantages of visualizing the gallbladder by first filling its cavity with a contrast fluid, consists in the ability to determine whether shadows suspected of being due to gallstones are inside or outside the lumen, and to detect also the presence of stones within the body of the gallbladder which stones do not obstruct the cystic duct, or completely fill the cavity of the gallbladder so that bile can not enter.

If the sphincter of Oddi is contracted and the shadow of the gallbladder does not appear before ten hours, a diagnosis of dysfunction of the liver may be made. If the cystic duct is patent, it is unlikely liver dysfunction will be so diminished that the dye will not appear at all in the gallbladder. Therefore this method of examination will give positive evidence of obstruction of the cystic duct.

When mechanical defects are found, such as obstruction of the cystic duct or gallstones are present, the choice of therapy must be surgical. On the other hand, if the gallbladder is found to function and its wall is elastic and it drains completely within forty-eight hours after the intravenous injection of the dye and no gallstones are present, the patient may be treated by duodenal drainage.

The author's references will appear in his reprints.

The Röntgen Diagnosis of Duodenal Ulcer*

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It might be well to preface our remarks with a short history of duodenal ulcer. It was first recognized and described by John Abercrombie of Edinburgh in 1831. From then until 1910 it received but scant attention, when Moynihan published his excellent and comprehensive clinical discussion of the subject. It remained for the American school to make the first advances in the röntgenology of the disease; and credit must be given to L. G. Cole for his pioneer efforts in the study of both the normal and pathological röntgen interpretation of duodenal shadows. For the more recent advances we are indebted to Akerlund, who did such notable work in the clinic of Forsel; he made a very searching inquiry into the röntgen manifestations of normal and diseased duodenums. And we owe our present thorough understanding of the röntgenology of ulcer to him.

This method of diagnosis has achieved such per-

*Read before the Bronx Hospital Clinical Society, April 20, 1925.

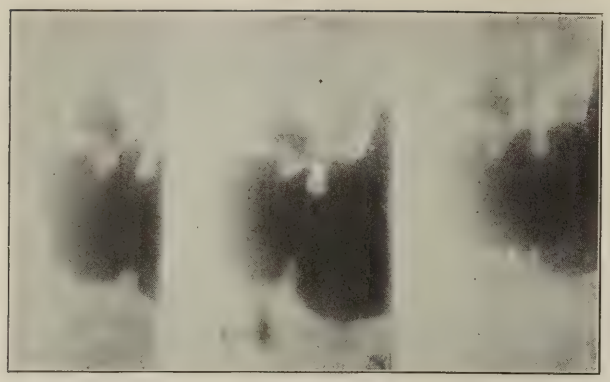

Fig. 1.—The normal cap, showing its change in contour with various degrees of filling.

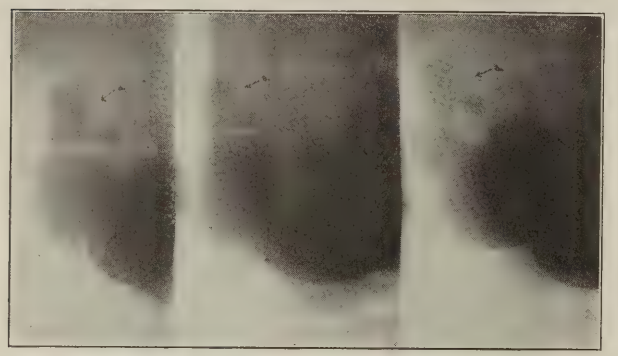

Fig. 2.—Ulcer of the duodenum with niche formation. The niche is seen at a.

Fig. 3.—Ulcer of the duodenum with niche formation. Note how the first view obscures the niche because of complete filling of the cap. Niche seen at a.

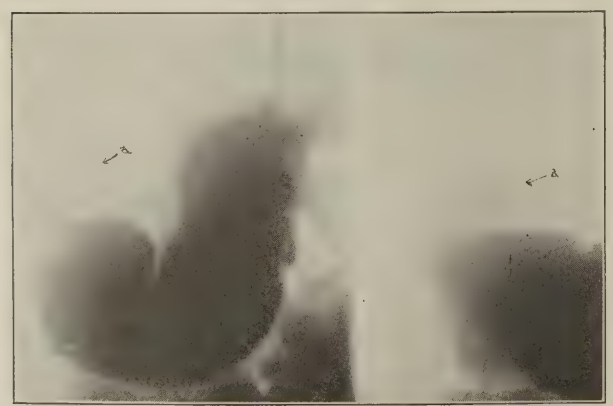

Fig. 4.—Pseudodiverticulum of the first portion of the duodenum (a) due to ulcer.

fection that we find authorities like Carman of the Mayo Clinic reporting ninety five per cent. correct positive diagnosis as proved by operation; and Holland of this city reports a slightly higher percentage. This approach to almost absolute certainty in positive diagnosis is something that cannot be asserted for many methods in use in the practice of medicine. However it is not to be inferred from these statistics that a similar exactness attends the negative diagnosis of the disease; for where such negative findings are reported, we have no way, in many instances, of proving the correctness of our assertion. Very often the diagnosis offers difficulties. But all things considered, the röntgen ray affords us a means of invaluable aid in the study of duodenal ulcer.

The normal duodenum (Fig. 1) is more or less triangular in shape, its borders are regular, the base is directed towards the pylorus, the pyloric sphincter is situated centrally, and there are no Kerkring folds present. This portion of the duodenum is freely movable. In this discussion in speaking of the duodenum, the first portion is meant; also it is called the cap or bulb. So that we shall use these terms interchangeably. Of course, the normal duodenum varies greatly in size and shape according to the habitus of the patient, as do all the organs of the body. It is important to note the difference in contour of the normal cap with various degrees of filling, and it is necessary that some such serial study of the cap as illustrated be made in order to determine its status.

This is a point that must be stressed and we shall call attention to it again in the consideration of the pathological duodenum. The second and third portions of the duodenum show the characteristic Kerkring folds. These segments are rarely the seat of disease, *per se,* but may be involved by contiguity from pathology in surrounding viscera. These portions are firmly held down by peritoneum to neighboring organs and to the posterior abdominal wall.

Ulcer of the duodenum usually occurs in the cap, and then is visualized on the lesser curvature of the cap, although anatomically it is usually situated on the posterior wall near the lesser curvature. The lesser curvature of the duodenum is that border which follows the lesser curvature of the stomach, and the greater curvature of the duodenum is that border which follows the greater curvature of the stomach. Ulcer of the duodenum will alter the regular contour of the cap in some way.

The niche is the characteristic röntgen sign of ulceration in the gastrointestinal tract (Fig. 2). As seen in the illustration, the niche must be differentiated from the visualization of a fold of the descending duodenum, when this organ takes a position directly behind the cap. This is accomplished by radiographing the patient in the oblique position; or else during the fluoroscopic examination, when the patient is placed in various positions, and the filling and emptying of the entire course of the duodenum may be observed. A filled cap may obscure an otherwise demonstrable niche (Fig. 3), and only when the cap is partially emptied is the niche apparent. This brings out the point made above of the need for serial röntgenography of the cap, and a study of its

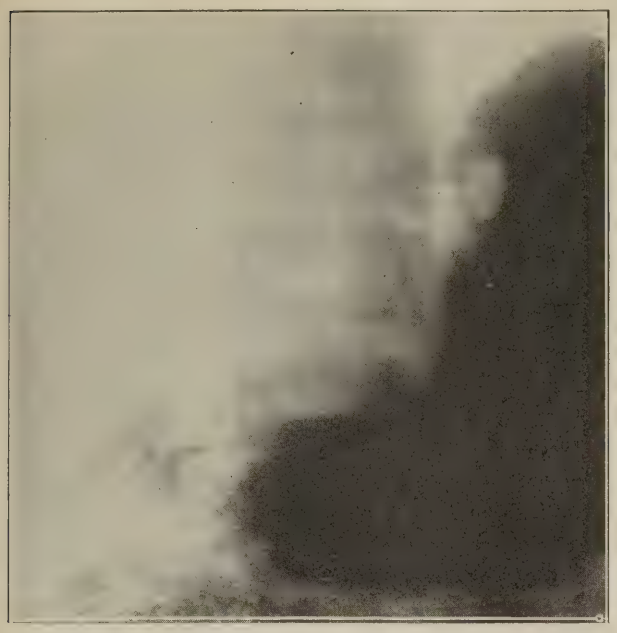

FIG. 5.—Total deformity of the cap due to ulcer.

FIG. 6.—Phthisis bulbi. The cap is shown as a narrow line a.

filling in various phases. It can easily be seen how one might be misled if an interpretation were based on the filled cap.

Pseudodiverticulum of the duodenum is occasionally encountered in ulcer (Fig. 4). This is due to ulcer formation and scar tissue retraction, and always occurs to the left of cap. This is in contradistinction to the true diverticulum, which occurs in the second portion of the duodenum, lies to the right of it, and is not associated or caused by ulcer, but is often congenital. It has no clinical significance and gives no symptoms unless it should become inflamed, and then it may produce an ulcer symptom complex. Also the true diverticulum may assume a very large size and present symptoms simulating pyloric stenosis.

Total deformity (Fig. 5) of the cap means ulcer in most every instance, but it is not pathognomonic; and the same may be said of the niche. Periduodenal adhesions from disease in surrounding viscera may produce marked deformity of the cap. But it must be borne in mind that a small erosion on the mucous membrane of the duodenum may give rise to extensive periduodenal adhesions. The importance of this fact is of concern to the surgeon. For every so often a patient is operated on for duodenal ulcer and the surgeon finds dense periduodenal adhesions, and after a separation of these he cannot feel any induration which indicates the presence of the ulcer, and the patient is closed up with the report that no ulcer was found. A variable time after operation, usually a few months, the patient again presents himself for examination and again duodenal ulcer is diagnosed. Reoperation again fails to reveal any induration to mark the site of the ulcer, and only after the surgeon incises the duodenum and inspects the mucosa does he find the lesion. This demonstrates the need for careful consideration on the part of the surgeon when operating on cases suspected of duodenal ulcer.

Phthisis bulbi is an occasional finding in duodenal ulcer. Here we do not see the cap, but merely a thin shadow of it caused by the adherence of some of the contrast substance to the mucosa (Fig. 6). In this type of cases the cap is extremely sensitive and irritable and immediately responds to any irritant, such as food, with violent contractions which force the irritant out into the intestine and so a thin line shadow is produced. The name of this phenomenon is derived from the analogous röntgenograph which is obtained in tuberculosis of the ileocecal region, but of course it is in no way related to tuberculosis.

The truly characteristic and pathognomonic röntgenograph of ulceration is the visualization of a niche on one of the curvatures of either the stomach or duodenum and an incisura on the same plane on the opposite curvature. Since most ulcers are seen on the lesser curvature, so must incisuræ occur on the greater curvature. So the finding of a niche on the lesser curvature of the duodenum and an incisuræ opposite on the greater curvature (Fig. 7) is absolutely diagnostic of ulcer, and no further evidence is necessary in coming to a conclusion. This cannot be said of any of the other deformities caused by ulceration in the duodenum, for any of them may be produced by other causes, and ulcer is diagnosed by exclusion, or by the consideration of other röntgen and clinical signs of the disease. It is true though that a deformed duodenum most frequently means ulcer.

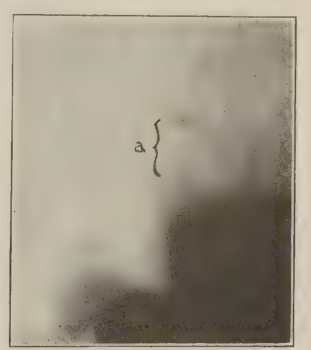

FIG. 7.—The niche and incisura type of deformity. The niche is seen at a, and the incisura at b.

In this presentation no attempt has been made to cover the subject completely, space does not permit it. But mention has been made of some of the frequent types of deformity that are encountered. The indirect signs of duodenal ulcer have not been men-

tioned. They are of the utmost importance, and are often the only röntgen evidence we have of the existence of the disease. Such signs are: gastric hyperactivity, gastric residue, colonic hypermotility, and other conditions. All the direct signs of ulcer have not been mentioned. The diminutive bulb sometimes caused by ulcer at the junction of the first and second portions of the duodenum, or the dilated bulb with delayed emptying, the socalled *dauer bulbus,* have not been discussed. In the last analysis the röntgen ray is not a conclusive means of diagnosis in this disease, except where we are able to demonstrate the lesion either by direct or indirect signs. At no time should the clinical picture be neglected. Fluoroscopy is of first importance in dealing with gastrointestinal diseases, and in a large majority of cases it alone is necessary; very often plates serve only as a matter of record and are valuable in following up a case. But on the other hand, we find cases where fluoroscopy gives us but little information, and plates must be relied on; this is particularly true of stout individuals, and those in whom the duodenum takes a position directly behind the pylorus.

In attempting to correlate the röntgenograph of the duodenum with the clinical picture, very often leads to what appears to be contradictory findings. A markedly deformed duodenum may give rise to but mild clinical symptoms, while a small niche may give rise to the most pronounced clinical symptoms. It must be remembered that only the uncomplicated ulcer gives the typical clinical picture of pain with food relief, night pains, and seasonal pains. The complicated ulcer gives rise to more or less continuous pain, no food relief, loss of appetite, etc. Also the röntgenogram cannot be taken as an index of the gravity of the lesion or the suffering of the patient.

It is true that duodenal ulcer exists which gives no röntgen evidence of its presence, or else misleading signs. What the explanation for this is we are not certain. But it is to be remembered that a small erosion involving the mucosa may give rise to a typical clinical picture, and yet give no röntgen signs in the duodenum or any indirect signs in the gastrointestinal tract. Also if the patient is free of symptoms at the time of the röntgen examination it is fair to assume that no spastic or irritative phenomena will be observed röntgenographically, for these signs depend on clinical activity of the disease.

It is interesting to call attention to the observations made by one investigator in Germany in the study of gastric ulcer. He employed the röntgen ray, and followed this up with gastroscopic investigations of each case. Then he proved either by operation or necropsy that the röntgen ray failed to show any evidence of an existing ulcer in thirty-five per cent. of his cases while the gastroscope did reveal the ulcer. If this is true of gastric ulcer, may we not assume that a similar number of duodenal ulcers are missed by the röntgen ray?

It is well to emphasize a few points in concluding. It has been shown that the normal duodenal contour changes with various degrees of filling, and that a filled duodenum may obscure an existing deformity, and for this reason a serial study of the cap is advisable. Also it has been pointed out that any deformity of the duodenum is suggestive of the presence of an ulcer, but is not absolute proof of its existence. That the indirect signs of ulcer are of the utmost importance, and that the niche and incisura type of deformity is pathognomonic of ulcer.

Thanks are due Dr. I. W. Held, of New York, for his kindness in permitting the use of some of the illustrations.

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The Rôle of the General Medical Practitioner in the Modern Mental Hygiene Movement*

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Until a comparatively recent period of time, the average person showing conduct disorders or behavior problems not accounted for by physical disease was regarded, not only by the layman, but also by the general physician, as a lunatic, for whom the sole salvation was incarceration in an insane asylum. Little effort was made to understand the basis for the peculiar behavior of the patient, and the entire problem was regarded as a punishment inflicted by the Almighty upon a family for some mysterious reason. The family regarded the situation as a calamity and associated with it a sense of shame and disgrace which prevented them from seeking any help. During the past two decades, however, there has been an entirely different attitude assumed towards the problem of mental disease, so that at present abnormal conduct behavior is no longer regarded as a visitation of punishment from supernatural sources, but simply as disease processes which run definite clinical courses and for which there are etiological causes and prophylactic measures.

The general practitioners in medicine, who are usually the first to be called upon for advice in the management and treatment of mental diseases, have of late years been inoculated with the scientific attitude of regarding these mentally sick individuals as patients, and not as nuisances who tend to strain their relation to the patient's family, and who tend to upset the physician's general routine work. Whether or not the inoculation had proved successful depended largely upon the intelligence of the particular physician and his scientific attitude towards medicine in general. Fortunately the majority of physicians have always been ready to approve any measure that will be conducive to the recovery of the sick

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whom they are called upon to help; hence we are constantly called upon by the general medical practitioners to state briefly the nature of the different mental processes, to offer an explanation for their various courses, and, what is more important, to offer all available prophylactic measures.

The following cases will perhaps introduce the subject more vividly:

Case I.—David A., aged sixteen, was sent to me by Dr. S. with the following problem. For the past six months this boy had been acting rather peculiarly. He frequently would leave his high school and would find himself miles away from his school and home. Often he would have headaches. A few days before he was sent to me, he found himself in New Jersey, being unable to tell how he had got there, how long he had been there, and what had become of his overcoat and books which he had with him when he had started out for school.

This boy was of normal delivery, had normal infancy and development, never had convulsions in infancy. He was bright in school and entered high school at twelve years of age. He was sociable, well liked by his playmates and was regarded as an exceptional student. His parents were quite intelligent but economically rather stressed. David was well developed physically. He participated in athletics and was regarded as a wholesome, lovable fellow. Physically he showed an unusually precocious development; he weighed 175 pounds; his blood pressure was 125/65; heart and lungs were negative and there was no evidence of any physical disease. He showed, however, widely spaced incisors, rather short and broad nails, and a strong development of his secondary sex characteristics. When questioned about his peculiar behavior he said there was absolutely no reason that he could offer to explain his conduct. He said that for the past six months he frequently had headaches, intertemporal in position. Occasionally these headaches would be associated with peculiar colored zig zag lines which were in one side of his visual field and which would last for about three to five minutes. He could not account for his peculiar wandering spells. It was quite obvious that we were dealing with a case of epileptic equivalents caused by dyspituitarism. The intelligence of the boy, the occurrence of these peculiar spells as the adolescent period, and the physical evidence of dyspituitarism made us feel that we were dealing with a case of pleuriglandular disturbance, for which the basic factor was a disturbance of the pituitary gland. Our suspicion was confirmed by therapeutic measures. He was prescribed pituitary extract which he took steadily, and for the year that he was under our care he was free from any of his spells.

Case II.—M. M., aged sixty-six years, was sent to me by Dr. B. His chief complaint was failure of memory, difficulty in locomotion and difficulty in urination. His family history was negative. This man was native born, had a common school education, and was an optician by trade. He was always rather of a lively, open disposition; friendly and a favorite among the women. He married at the age of twenty-five and had five grown children. Except for a few attacks of gonorrhea he has been relatively free from any disease. About eight years ago he had a few dizzy spells and he consulted his physician. The latter informed the patient that his blood showed positive luetic infection. The patient was indignant over it and insisted that the physician was merely trying to enlarge his practice. For how could it have been possible for him to contract syphilis? In his own naive way he could not understand such a state of affairs. He had never associated with prostitutes and was always of clean habits. The fact that he frequently had sex relationship clandestinely with those who had frequented his place of business did not seem to make any impression upon him. Those women were, to his point of view, perfect ladies, and how could he insult them by even suspecting that they had syphilis? Upon examination this man showed irregular pupils which reacted sluggishly both to light and accommodation, tremors of his facial muscles, positive Romberg, unequal knee jerks and a tendency to a left Babinski. His spinal fluid showed 150 cells, four plus globulin, four plus Wassermann and a paretic colloidal gold curve. It was obvious that this patient was suffering from paresis.

Case III.—Betty E., aged nineteen years, was sent to me by Dr. J. because of her constant complaint that one of the instructors in the Teachers' Training School was urging her to run away with him. The history in this case is quite important. She is the second of a family of two children, of normal birth and of normal infancy. When a child she was rather quiet and obedient and gave the family very little trouble. She was regarded as a very good child. She was very different from her socalled boisterous, fresh sister, who would always get into mischief, and who had been a source of trouble to her family. When our patient was to be graduated from public school she displayed unusual interest in her books and in her studies and was regarded by her instructors and by her family as certain to meet with success in life. In high school also she was studious, was among the leaders of her class and would never go out with girls or belong to clubs or look for fine clothes as was the habit of her sister. When she entered training school she continued in the same routine, remaining at home, showing meekness and unusual obedience to her family and thereby being regarded as a favorite child. In her work at training school she showed good progress, but her bashfulness and shyness attracted the attention of some of her teachers. One of them told her mother that the child was not acting like the other normal pupils in the class. During the examination period she would lock herself in her room and would study until early in the morning. Such a procedure apparently met with the approval of the parents. For the past six months, however, her work became poor in school; she failed in some subjects and became quite a changed person; so much so that even her family began to realize that the child was ill. Upon advice of the family physician she was brought to me for my opinion. Physically and neurologically her condition showed nothing of significance. Mentally, however, she showed typical signs of a deteriorating psychosis for which nothing could possibly be done at that time. She was quiet, somewhat suspicious, but spoke clearly; she jumped from her seat and would look out from the window answering imaginary voices. When asked what she had heard she stated that about a year or so ago one of her teachers

in the training school started to control her mind; that he was constantly talking to her, and that he was now across the street urging her to run away from home with him. She stated that she was having sexual relations with him "through the medium of the air." She had ideas of reference and had belief in thought transference, reading of the mind, etc. She was actively hallucinating, was deluded and showed mood and emotional deterioration. This case of course was a definite, clear cut case of a dementia precox, paranoid type.

Varied and different as these cases appear to be, there is one basic factor common to all of them, namely, that there has been a break in the delicate mechanism which constitutes normal human behavior and that this break was caused by controllable factors that are found in the physical, instinctive and emotional makeup of the person and in the environmental situations that influence human conduct. Moreover, these factors even in their earliest manifestations were discernible in sufficient intensity to arouse the suspicion of a critical physician that the patient was suffering from behavior troubles which, unless immediately checked and corrected, would lead to serious mental illness.

What is normal human conduct? It is behavior that adapts the individual to his surroundings in such a manner as to be in harmony with his instinctive and emotional needs, and which will ultimately lead to normal biological existence. Normal behavior implies sound somatic conditions, adequate instinctive responses, proper modification of instinctive demands along socially approved channels, adequate emotional gratifications, and a proper correlation of these components in an organism so as to enable it to meet even unfavorable environmental situations.

Stating the problem, perhaps, in a simpler manner, normal behavior depends upon certain laws and principles which have basic fundamental anatomical, physiological, psychological and sociological factors, which should be known to every practising physician. Furthermore, the observation of these laws and principles lead to normal mental life and form the basis of the modern mental hygiene movement.

At birth the individual is endowed with certain hereditary traits, a definite anatomical constitution, and potentialities for action which are the instinctive component of his personality, and a definite tendency to derive a color tone of feeling, which composes the affective or the emotional side of his instincts. In infancy and in childhood his needs and cravings are practically fully satisfied and are met by the parents who tend to modify them to the socially approved standards of the environment in which the individual happens to be. At puberty there is a certain amount of personal responsibility encountered due to the enormous metamorphosis which has occurred not only in his physical, but in his emotional and instinctive life as well. This is really the beginning of the period of emancipation of the child from his parental control. In the period of adolescence this emanicipation from parental influence continues and the individual launches upon his own resources to meet environmental situations. At the end of this stage he is ushered into full manhood, free from parental control and expected to curb some of his own instincts and desires, and to meet situations fully on his own responsibility and to manage them in perfect harmony with his own personality and with those of the socially approved standards. Additional responsibilities are then facing him.

We see, therefore, that there are various stages in one's biological development which are likely to be interfered with and which result in abnormal conduct. The adequate handling of these factors really constitutes modern mental hygiene.

Mental hygiene must begin in the prenatal period. There is no doubt that the child should be given the privilege of having normal, healthy parents. The physician who knows that one of the contracting parties to a marriage is suffering from syphilis should tell that person that the offspring is apt to have hereditary lues unless active treatment is properly instituted. Such diseases as hemophilia and deaf mutism could be checked if persons suffering from such hereditary ailments were discouraged from bearing children. A large percentage of mental defects could be prevented if mentally defectives were discouraged from marrying. The pregnant woman should be given all the care that medical science offers in order that her offspring should receive a normal healthy somatic constitution. We are morally certain, though we cannot as yet postulate definite causal relationship, that infectious disease in the mother, in the pregnant woman, has detrimental effects upon the brain development of the individual. There are many who believe that epilepsy and mental defect in the offspring may result from the influence of toxins circulating in the pregnant woman.

It is important that obstetricians should hold in mind the future of the child. Prolonged labor is likely to put some undue pressure on the brain of the child, and may cause serious anatomical lesions in the brain which may lead to mental deficiency and to other neurological and even psychiatric conditions. There is no doubt that high forceps applications, especially in the hands of the untrained, cause considerable damage to the brain. With the modern trained obstetrician and the general application of aseptic measures in obstetrics, there should be little need for a high forceps application. One need hardly mention that the infant should receive the best possible care as far as feeding is concerned, and, in the present stage of our civilization, there is no excuse for the existence of rickets and other similar devastating diseases of infancy which leave a deteriorating impression upon the brain of the child.

Childhood is the golden age of mental hygiene. It is in this period that the personality is formed. The child mimics its adults. Many a neurotic mother has caused the development of neuroses in her children. Many a child will use illness as an excuse for not going to school or to gain some extra attention from the parents, because she has found that the mother has gained her ends from the father by feigning illness. A child should not be coddled too much. No child should be allowed to sleep with the parents. Many a boy has found it difficult to develop into independent manhood because of this practice, which caused an abnormal parental fixation. Many a parent has started a child on the road to constitutional psychopathic inferiority by satisfying everyone of its whims and fancies, by constantly lying to the

child in order to gain its obedience, by fighting the child's battles and thereby preventing its normal personality development.

On the other hand, some parents are too critical and harsh towards their children. They will never ask a child to perform a certain task, but order him to do it. Many a time they will not even wait to gain the child's attention before ordering him to do something, and the child is left in a frightened, panicky state. In order to escape punishment at the hand of an unreasonable parent, the child will lie in order to escape a trying situation. Making children obey needless commands, preventing them from participating in wholesome sports or games, deceiving them, showing favoritism among children, and inflicting undue and needless punishment, may cause feelings of discontent and rebellion, and may lay the foundation for delinquency and even criminality in later life. The child knows when he is wronged, and the feeling of resentment thus aroused may cause a conditioned antipathy for, and rebellion against, all other sorts of authority, so that later on the child may prove a troublesome pupil at school, and may even become a delinquent adolescent and a criminal adult.

We must, however, guard against the very good child; the one who does not show any initiative, who obeys his parents perhaps too well, who is overstudious, and who plays little, and who does not have any playmates. Such a child shows a peculiar negativism to all stimuli that immediately places him in the group of the schizoid personalities, which sooner or later will develop into a dementia precox type of psychosis. Such a personality, it will be recalled, was possessed by Betty E., Case III. It is really astonishing how many parents will tell the psychiatrist in discussing the personality of the schizophrenic offspring that he was "such a good boy"; that he had never given them any trouble, and that he had never "run wild" in the streets like the other children of the neighborhood. Poor parents. Little did they know that the very qualities which they were lauding were danger signals of an impending catastrophe.

There are children who display an undue amount of energy, who are overactive and overplayful, constantly on the go, apeing the other pupils, and who are also very bright and possibly precocious, who are apt to be the favorite of the teacher and the parents. Another group of children may show opposite traits. They are brooding, given to crying spells, who are rather slow in their physical and their mental activities. These two groups offer really an identical problem, for they represent personalities of the manic depressive type and are apt to develop manic depressive psychotic states when they are confronted later in life with difficult situations. These children should receive the best possible psychiatric care and attention, and they should be so managed that their peculiar personality traits will be checked before they gain complete hold on the growing children.

Still another group of children presenting considerable difficulty in management and requiring expert attention, are those sensitive youngsters who crave a good deal of attention, who cannot stand criticism, and who seek praise to such a degree as to even pursue deceitful methods for securing it. Such children have a lowered threshold to pain sensibility. This group must receive adequate training for they later form those adults who show the various forms of psychoneuroses, especially hysteria.

Occasionally in a child of apparently normal personality traits there may develop a neurosis or even a psychosis because of various situations at home especially in the relationship of one parent to another, or of parent to child. Unhappy marital relationship between parents not infrequently causes emotional upsets in children. The mother may take the child too much in her confidence and force the child to share with her all her cares and worries. Frequently an inconsiderate parent may precipitate even a psychotic episode in a child by assuming a tyrannical attitude towards certain problems. The following two cases illustrate the points under discussion:

Case IV.—Tillie S., aged fourteen, was brought to me because of nervousness, restlessness, crying pensaries and by private physicians for about five years.

Physically the child appeared to be a well developed and well nourished young girl showing no evidence of any somatic disorders. Mentally, however, she appeared to be quite sad, rather timid and cried easily. She said that her mother was worrying her. Her mother gave the following history:

She made good progress at school. The home environment, however, had not been favorable. The father, who was a barber by trade, paid little attention to his family. The mother accused him of infidelity, and there were frequent quarrels at home. The mother was given to crying spells and all sorts of hysterical manifestations. She would stay in bed for days. She took little Tillie into her confidence when she was about eight or nine years of age. She told her of the bad character of her father and of the suffering that the mother was enduring at his hands. She told the child that the only reason she would not leave her father was because she wanted to take care of the children. As Tillie grew older she began to share the family burden with her mother. When the mother would take to bed, in one of her hysterical fits, Tillie would look after the house and would prepare the food. She frequently would have to stay away from school. She would lie awake nights and worry about her mother.

The father, on the other hand, was kind and attentive to Tillie, and would shower her with gifts and other evidences of devotion. He, on the other hand, complained of the unkindness of the mother. Little Tillie was therefore torn between two conflicting emotions, and furthermore, at a delicate age, was burdened with grief and sorrow the nature of which she was entirely too young to understand. No wonder that she could not sleep nights, that she would have frequent crying spells, and that she began to do poorly at school. The dispensary physician told the mother that the child was in good condition and not to worry over her; but this did not alter the situation as far as the child was concerned. A month or so prior to her coming to me, she had had her first menstrual experience. She was utterly unprepared for it, and the sight of blood made her run with horror into the arms of her mother. The latter instead of explaining to her in a kind and gentle manner the significance of this phenomenon, told her that it indicated that the child was entering into womanhood

and that she, too, would probably share a lot similar to that of her mother. This information tended to intensify her dread and fear, made her more broody, and prevented her from sleeping.

This growing sensitive child was thrown into a severe neurosis because of ignorant, inconsiderate parents who forced her to share with them the misfortunes of an unhappy family life.

Of course, it is known to every physician that physical disease may be the basis for a neurosis in childhood. Cardiac valvular disease, anemia, errors of refraction, focal infection in teeth and in tonsils, speech defect, etc., may lead to abnormal conduct.

Case V.—Catherine M., aged eight years, was brought to me at the dispensary, the Neurological Clinic at the Brooklyn Jewish Hospital, by her mother, who stated that for the past six weeks the child had been doing poorly at school. She had failed in her subjects, would frequently cry in the classrooms and at home, could not eat, was somewhat constipated and would frequently cry at night, losing a good deal of sleep. When examined by me she showed nothing of a significance physically except a pallor of skin and mucous membrane. Intellectually she had an I. Q. of 110, and that was corroborated by her previous school work. Urine examination was negative. Blood count, however, showed a definite secondary anemia with hemoglobin of about sixty per cent. and a red blood count of 3,200,000. She was put on syrup of iron iodide and her mother was instructed to give her all the iron containing fruits and vegetables, and instructed to follow ordinary hygienic measures. The child improved remarkably under this treatment, so much so that she was able to return to her parochial school where she showed once more a normal poise and did well in her work.

The scope of this paper prevents me from further elucidation of the subject of mental hygiene in childhood. Suffice it to say that those children who show marked shyness, inattention at home or at school, sensitiveness to criticism, day dreaming, hypochondriacal fears, hyperkinetic or hypokinetic traits, sullenness, irritability, crying spells, twitchings in different parts of the body, poor motor control, etc., should receive proper and immediate medical supervision.

Adolescence brings with it great responsibilities for the parent, teacher and physician. This delicate period of development causes considerable introspection, and may prove a stumbling block for an individual possessing a delicate neural mechanism. The sexual development at this period may be fraught with considerable danger. At this stage of development, every girl should be told by her mother of the approaching change in her physical and mental make-up. Every boy should be told of the secret of life, and not be left to work out his own salvation, and learn of the mysteries of creation either in the barn or in the house of prostitution. It is amazing that parents should be so unwilling to discuss these problems with their children. Modern civilization, with the various billposters, suggestive literature, exciting movies, and other factors, causes hypersensitivity of the various emotional and physical reflex arcs comprising the psychosexuality of the persons and may play havoc with the mental life of the adolescent person unless the parent has prepared the child to meet these stimuli adequately.

Marked emotional crises may occur in the adolescent period and these may vary from mere transitory crying spells or periods of depression to irritability and resistance to all parental or school authority. The physician must be ready to recognize these fluctuations in mood reactions, and instruct the parents and teachers how to combat them. In this period of development many of the psychoses of later life may have their incipiency.

The physician must guard against such traits as seclusiveness, stubbornness, and excessive day dreaming, for they are danger signals of impending schizophrenia. The hyperkinetic, overtalkative, facetious, impatient, boisterous adolescent who shows a superabundance of energy and who has undertaken too many tasks and burdens must be taken in hand quite early, for in him there is likely to develop a manic phase of a manic depressive psychosis. The person lacking in energy, and in initiative, who is generally apathetic, and who perhaps is complaining of various somatic disturbances for which there are no anatomical causes, who tends to brood over insignificant matters, must be managed quite skillfully in order to prevent the development of a depression.

The emotionally unstable, hypersensitive, delicate person who is unable to stand the slightest criticism, who is constantly seeking approbation from his superiors is apt at this time to manifest real hysterical phenomena whenever its whims and fancies are not accorded immediate response.

At this period also all sorts of sexual fixations occur. All types of sexual aberrations may be entered into because of the unstable emotional condition that prevails at this period of life. Furthermore, some of the emotional and instinctive cravings of the individual may find expression in many overt antisocial acts, and in delinquency, especially along sexual lines. Other antisocial manifestations such as theft or robbery may result from adolescent, conflicting emotional states.

From the foregoing it is obvious that mental care of the individual should begin before birth, and continue until death. Every school should have a properly trained physician who should recognize incipient pathological mental reactions, and check mental disease. No high school should be permitted to exist without having a trained psychiatrist observe the pupils, for it is in this particular period of life that most of the pathological mental reactions find gross expression. It is far more important for the pupil to have a sound understanding of his own mental mechanism than it is for him to know when Julius Cæsar crossed the Rubicon, how to decline a Latin verb, etc. Every court should have attached to it a psychiatric adviser so that mentally sick people should not be punished for antisocial conduct over which they have no control.

The general practitioner, because of his close intimacy with the family of the patient, because of his constant observation of the family life and the family situations, because of his knowledge of the strong and weak components of the personality of the individual, and because he is the first to whom the family turns for help, is in a position actively to contribute to the modern mental hygiene movement.

Implants with Cannula in the Treatment of Atrophic Rhinitis

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Atrophic rhinitis is a common condition which is spoken of in the most ancient of medical literature. The condition varies greatly. In some cases there is but slight odor, and dryness of the nasal mucosa with a few crusts here and there. In other cases the odor is extremely offensive, the tissues within the nose much atrophied, the passages wide open, and all surfaces covered with large crusts. As long as the condition has been known to the profession, it is strange that there is still a disparity of opinion regarding its causes. Some consider it merely secondary to sinus infection, while others look upon it as a primary disease due to a specific organism.

Despite investigations, there has not yet been discovered a specific organism by which the disease may be reproduced. Investigators have been able to grow in culture tubes a germ which produces, in the culture tube, the peculiar repellent odor of atrophic rhinitis.

In America many minor surgical procedures have been recommended in the treatment of this condition, but the work of American operators lacks that convincing element that the work of several continental operators posesses.

Lautenschlager has treated a large number of these conditions surgically. He holds that atrophic rhinitis is only the terminal stage of any rhinitis which is not arrested in its hypertrophic state, or which is not cured. Ozena is not therefore a special infectious disease, and there is no difference between the different types of atrophic rhinitis. All types of rhinitis have an inflammation as their point of origin, and their starting point is the interstitial tissue of the mucosa. From this they progress to the bloodvessels, which they obliterate. The vessels being obliterated, a degeneration and atrophy of the mucosa and of the bone follow. The mucosa no longer secretes in the ordinary way, the serosity is diminished and the secretion is thickened. Lautenschlager thinks that at will, a hypertrophic rhinitis can be transformed into one of the atrophic type, and vice versa.

All rhinologists have seen unfortunate cases where after too vigorous treatment, crusty rhinitis has developed with abnormally large nasal fossæ. These cases can be theoretically considered as different from ozena but practically they scarcely differ from it in regard to the reversal of Lautenschlager's affirmation, and his operative results are there to prove this possibility. It has been shown that injections of antidiphtheritic serum transform an atrophic rhinitis into a hypertrophic rhinitis but this change is not lasting.

In his operative technic, based on the foregoing conceptions, Lautenschlager insists on: 1. Suppression of inflammation. 2. To suppress any hindrance to circulation in the nasal mucosa. 3. To obtain a good circulation. 4. To prevent the exaggerated rôle of the secretion in the interior of the nose. 5. To obviate desiccation.

Lautenschlager accepts the view that ozena originates in an infection of the nasal sinuses in youth and that the pathological changes which occur in the bones and mucous membrane, the atrophy and the crusting are of secondary importance.

In his technic, Lautenschlager advances the lateral nasal wall toward the middle line, and removes the antral lining, whether macroscopic evidence of disease exists or not. In order to obtain a healthy lining to the antrum, he inverts as large a portion of the oral mucous membrane as possible into the denuded cavity and plugs for a long time so as to induce a thorough saturation of the bone. He also advises an inversion of Stenso's duct so that the resulting continuous flow of saliva will afford a further stimulus to the bone. The opening between bone and antrum is maintained which permits the saliva, which is only intended to moisten the walls of the antrum, to find its way once more into the mouth cavity.

Max Halle, in discussing the operative treatment, holds that as good or even better results than those obtained by Lautenschlager may be achieved by a modification of the latter's operation, which obviates much of the complicated technic and permits of a relatively simple aftertreatment. The inversion of Stenso's duct is discarded. The large fistula between the mouth and antrum is sufficient to insure that the gauze filling the antrum is kept moist by capillary action, while saliva is also forced into the cavity during the act of deglutition.

Halle operates with a local cocaine adrenalin anesthesia. Injections of a one half per cent. solution of novocaine with adrenalin are made in the mucous membrane of the septum, the floor of the nose, the lateral wall of the nose, and the mucous membrane situated anteriorly to the turbinals. The facial walls of the maxillæ are similarly infiltrated, and if possible block anesthesia is obtained by injecting the sphenomaxillary fissure. Operation may be started after an interval of ten minutes. The mucous membrane covering the medial aspect of the lower turbinal should be freshened without destroying any of the mucous membrane. Similarly treated is the mucous membrane covering the contiguous surface of the nasal septum. A vertical incision is made through the mucous membrane, covering the lateral nasal wall. This runs immediately in front of the middle and inferior turbinals and is carried down to the bone. The lower end of the incision is continued on to the floor of the nose which it crosses in a horizontal direction to end at the nasal septum immediately behind, and running parallel to the apertura piriformis.

The mucous membrane and the periosteum of the nasal floor are elevated with a fine elevator medially as far as the septum, and laterally to slightly beyond the border line dividing the floor of the nose from the lateral nasal wall. Following the line of the incision in the mucous membrane, a slender chisel of the West pattern is used to chisel through the bone,

avoiding splintering, the nasal wall is chiselled through at its junction with the floor of the nose. The sectioning is carried out beneath the mucosa, the chisel being inserted into the pocket formed by elevating the mucoperiosteum.

The mobility of the lateral nasal wall being assured, it is then displaced inward forcibly and *en masse* by means of a blunt elevator introduced into the antrum from the front. In doing this, special attention must be given to the upper or middle turbinal regions. If the antrum there appears normal on inspection, the lining membrane is not interfered with; but, if Lautenschlager's example is to be followed, it should be removed in its entirety, resecting a part of the margin of the aperture, if necessary.

After the lateral wall has been forced inward, it forms a sharp angle with that portion of the lateral nasal wall still remaining. Working through this opening, it is an easy matter to control the ethmoidal labyrinth; the same opening is also used in the insertion of iodoform gauze. This is employed to insure the continued medial apposition of the inferior turbinal to the septum, pending the formation of adhesions.

The gauze plugs should not be removed for five days, owing to the abnormal tendency of these patients to hemorrhage. Middle ear complications are usually only to be feared in the event of much sneezing being indulged in after the removal of the plugs.

The adhesions are left undisturbed for as long a time as possible, even should respiratory obstruction be complained of. It is a simple matter at a later date to divide the adhesions and eventually to lateralize the turbinal. Postoperatively the patients must continue douching of the nose for as long as judged necessary.

I have quoted at considerable length from the writings of Lautenschlager and Halle. In order to reduce further the severity of operative procedure, and at the same time to get the obstruction of the nose which they obtain by the extensive sectioning of the lateral wall of the nose, I have used in these cases implantations into the septum medially, and implantation into the turbinal tissues, and the tissues adjacent.

In this country simple operative procedures have been practised, such as injection merely of paraffin, or the implantation of a small amount of cartilage or bone under the septal mucosa, and surgeons have claimed very striking results from such treatment. At the same time in this country there has been no operator who can show a large number of cases, hundreds of cases in fact, such as can our continental surgeons, in which striking results have been secured in severe cases. It is for this reason that we must take more or less interest in the radical measures of continental operators. American surgeons who have suggested the mere injection of paraffin have claimed striking results from this treatment. However, we must not forget that they have not had large numbers of severe cases which have responded to the simple surgical measures they recommend. There has been a tendency in this country to attribute relief in these cases to simple blocking of the air passages. It will be noticed from the comments abstracted from Lautenschlager and Halle, that they consider the sinuses important factors, and drain the ethmoidal as well as the maxillary.

This phase of these cases is worth considering and if there is any evidence of frontal sinus involvement, it is advisable to pinch off the thickened end of the upper turbinals and insure drainage from this space, even when there is only a suspicion of ozena.

Blocking of the passageway, no doubt is important. With a view of effecting this, with less surgical trauma than is necessary in the Lautenschlager or Halle technic, I have used implants into the septal walls. Those American surgeons who simply insert a small piece of cartilage or bone taken from another patient in a septal resection, certainly do not block the passageway very thoroughly. Some operators inject paraffin under the mucosa of the septum. Paraffin, of course, may cause much more connective tissue proliferation than desired, and if placed in an inaccessible situation can make trouble.

Gutta percha is an agent which subcutaneously does not produce excessive irritation. It appears to be just about as insoluble as a metallic deposit and resists the action of the body cells indefinitely. Implantations in the septum may be effected by a very simple technic using a cannula and trocar. This old fashioned instrument can be inserted under the mucosa, pushed along between the septal bone or cartilage, and mucosa, forming a pocket. In this, the gutta percha may be packed as much or as little as the operator desires. To facilitate packing, I have cut a slot in the cannula and had soldered around it a flange. This makes it easy to drop into the cannula the gutta percha particles. With a blunt ram, these may be pushed into the pocket formed. This technic has an advantage over the original technic recommended by me several years ago, when I injected the gutta percha with screw piston syringes. Unless chemicals were added to soften it, it was necessary to work rapidly to prevent the gutta percha from hardening in the needle, but when it is cut into small pieces, and inserted in a cannula, the operator may be just as deliberate as he wishes.

If the atrophy in the bones of the nasal passage is very pronounced and we have very large spaces between the septal walls, and the atrophied turbinals, it may be well to insert the gutta percha implants into the lateral wall as well as the septal wall. In these cases, the insertion should be made rather high up, as far as the operator can conveniently see with good illumination, and fairly well back in the nose. After an insertion has been made above, the operator may make another insertion rather low down, the object being to insert the implant so that there will not be too much tension upon the atrophied mucosal layers. If there be too much tension, sloughing out from pressure would defeat the purpose of the implant. Implantations can be so placed within the nose, as practically to occlude the nose, but personally I have not felt that such technic was adequate in severe cases. Neither have I felt it necessary to open the sinus into the mouth, but by a process of displacement after incising, have made a free opening which gives good drainage of the sinuses and allows packing.

To open the sinuses freely, one should incise just below the level of the orbital floor, coming down to the floor of the nose. Such an incision enters the maxillary sinus.

This incision should then be continued along the

floor of the nose directly backwards, and in some cases it may be well to make a parallel incision above the inferior turbinals. The tissues formed by this flap may then be displaced easily, and the maxillary sinus entered with a large blunt separator.

If the mucosa gives evidence of disease, more or less curetting may be practised before packing is done. When a maxillary opening is of such size as to give free access to it, the packing may be inserted in such a manner that its removal is not particularly difficult.

Today the implants in greatest favor among surgeons are those of living tissues taken from patients themselves. Cartilage implants may be made through the cannula described, but much more convenient living tissue to obtain is that of the abdominal wall. This is easily obtained after injecting a two per cent. novocaine solution in the skin. Fat seems to be better able to resist efforts of the body cells to destroy it, if it is cut into small pieces. There is another factor in the implantation of fat which we may consider of some advantage. After it has been placed in a new position in the body, there is more or less swelling of it. This will increase the effects secured at the time of operation. When fat is used as an implant, the technic is the same as where the particles of gutta percha are used, except that the fat may be used in masses, just small enough to pass through the cannula.

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Rhinitis

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Inflammatory diseases of the nose are the most common conditions seen in the practice of the otolaryngologist and therefore require more careful study and consideration than has been hitherto given them. The frequency of these conditions in specific fevers, infectious and exanthematous diseases, makes them important to the general practitioner. In order that the various forms of rhinitis be treated intelligently and effectively, an exact diagnosis clinically, pathologically and etiologically must be made. Frequently constitutional causes should be looked for and one can be guided by a closer study of the gross pathological picture seen in the condition. Operative intervention is a common form of procedure irrespective of the diagnosis and consequently this practice has a tendency to throw many good nasal operations into disrepute.

Rhinitis may be classified as follows:

A. ETIOLOGICAL CLASSIFICATION
1. Direct (bacterial)
2. Indirect
3. Reinfections

B. CLINICAL AND PATHOLOGICAL CLASSIFICATION
1. Simple acute rhinitis
2. Turgescent rhinitis (vasomotor)
3. Membranous rhinitis
4. Pseudomembranous rhinitis
5. Hypertrophic rhinitis
6. Hyperplastic rhinitis
7. Caseous rhinitis
8. Atrophic rhinitis
   a. Simple
   b. Due to suppurative sinusitis (Ozena)
9. Suppurative rhinitis

C. THE UNUSUAL RHINITIDES
1. Acute coryza of the newborn
2. Gonorrheal rhinitis
3. Diphtheroid rhinitis of the newborn

ETIOLOGICAL CLASSIFICATION

1. *Direct or bacterial.*—Many efforts have been made to isolate a specific organism with apparently little success. The difficulty lies in the fact that in the early stages of infections there are a variety of organisms, frequently without any one type predominating. As infection progresses, this picture changes and a predominating organism results but the identity of this organism is not constant in the different controls.

A mixed infection transferred to a healthy nose sometimes failed to infect and when infection did occur the mixed type of bacteria disappeared and a predominating organism supplanted it, and as mentioned, the predominating organism was not identical with the different investigators. Foster (1) says he has observed ultramicroscopic bodies and believes them to be the offending organisms because Berkefeld filtrates diluted to one to 10,000 have produced classical rhinitides and excretions from those infections reproduced the original symptoms. However, most all writers agree that the cocci group are generally the offending organisms.

2. *Indirect.*—Under this head we include a condition which is apparently an aborted cold and which is only a paretic state of the nasal mucosa. This condition may subside without infection or may go on to suppuration. This state of swelling represents the first stage of inflammation minus the presence of the offending organism. It may be produced by: a, an endocrine disturbance as is seen in children during fits of anger, sorrow, or crying; b, draughts or sudden changes of temperature; c, autotoxemias; d, irritants, either mechanical or chemical; e, obstructive lesions, i. e., deviated septa, hypertrophied turbinates; f, reflexes from eyestrain.

3. *Reinfections.*—This type represents the so-called chronic cold, the cause of which is often found in ulcerated gums, septic tonsils, adenoids and subacute sinusitis.

CLINICAL AND PATHOLOGICAL CLASSIFICATION

1. *Simple acute rhinitis.*—This is really a socalled cold in the head, an infectious and contagious disease involving a part or whole of the nasal mucosa, including the accessory nasal sinuses, the symptoms usually limiting themselves to the respiratory apparatus, but the remotest part of the body may be involved.

It may be due to a disturbance of local circulation by a sudden change of temperature or vasomotor nervous system disturbance, a local growth of bacteria which is enhanced by obstructive lesions, i. e., deviated septa, hypertrophied turbinates or growths, trauma, change of climate, chemical irritation, lack of proper clothing, shock, and exposure to draughts and colds. Another form of coryza is not due to infection but rather to irritation of the nasal mucosa from some metabolic condition. In some persons certain spices and alcoholic beverages will produce the symptoms of an acute coryza which will disappear in one or two days after the elimination of the toxic substances. In some anemic children with a tendency to rheumatism, sugar or egg albumen might be the cause of a never ending nasal discharge, the treatment of which is apparent.

Pathologically, at first the mucosa is hyperemic with a bluish, glassy, dried appearance. As soon as the second stage of secretion is reached, the mucous membrane is swollen and edematous and covered with a water secretion. The swelling of the mucosa of the turbinal bones obstructs the nasal cavities and causes difficulty in breathing. The inferior meatus is filled with a grayish mucus and interferes with expiration. Gradually the edema of the mucosa disappears, the amount of secretion diminishes and normal conditions are established in about three weeks.

The treatment of this condition may be divided into local and general. The purpose of the local treatment is to remove secretion and reduce tumefaction, produce good drainage from the sinuses and establish ventilation. The medicaments are used to promote reaction to inflammation. The ones usually used are cocaine and adrenalin locally, steam inhalations, postnasal irrigations with some mild alkaline solution as Dobell's solution twenty-five per cent. or Seiler's tablets.

Constitutional treatment in the acute stage consists of giving quinine, hot drinks, Dover's powder, hot mustard foot baths, rhinitis tablets, aspirin, phenacetin, caffeine and the use of cathartics. The use of a tonic containing iron and strychnine internally is an excellent measure. As the acute attack subsides, belladonna may be resorted to.

After the inflammatory condition has entirely subsided surgical removal of the obstructive lesions may be attempted.

2. *Turgescent rhinitis.*—In this form, we always have a swelling of the inferior turbinates with symptoms of nasal obstruction. The etiology may be the same as in acute rhinitis, but in this form a deflected septum is invariably found. The discharge is thick and mucoid in character and the turgescence eventually results in a permanent hypertrophy of the mucous membrane. If an obstruction is present around the middle turbinates, the retention of secretion causes a hyperplasia around that area.

The local treatment consists in the use of Seiler's tablets or Dobell's solution as a nasal douche. Post nasal irrigations of two per cent. warm argyrol solution is highly recommended. These irrigations are followed by the introduction of pledgets of cotton wet with one per cent. silver nitrate, along the septal surface of the inferior turbinates in both nostrils. After five minutes, the pledgets are removed and the nose is irrigated with a mild alkaline solution. Cauterization of the inferior turbinates is good in some cases. The electric cautery is preferable, although others prefer the submucous application of chromic acid to the inferior turbinates.

Surgically, it is important to perform a submucous resection in the cases having a deflected septum. Nevertheless, underlying constitutional disturbances must be looked for and treated accordingly in order to be sure of a permanent result.

3. *Membranous rhinitis.*—In this condition, a membrane is seen over the septum and the turbinates accompanied by severe inflammation. Usually some glandular involvement is seen. In about fifty to seventy-five per cent. of the cases, the Klebs-Loeffler bacillus is found, while in the others the streptococcus is seen. Clinically it is and is not diphtheria, but it is wise to consider it diphtheritic and treat it as such. What relation this has to diphtheria has not been definitely established. The local treatment is the same as in simple acute rhinitis.

4. *Pseudomembranous rhinitis.*—A membrane is seen on the inferior turbinates and the septum. On examination the exudate is found to be composed of fibrin, leucocytes, red blood cells and mucus. This condition makes one suspicious of diphtheria, which can be determined by a culture. Upon removal of the membrane, there is a tendency to bleed. The membrane may be so extensive as to cause a serious blocking of the nasal passages. The diphtheria bacillus is rarely found in this condition and therefore is not diphtheritic, although it is advisable to isolate the patient until otherwise proved.

The treatment consists of irrigating the nose with Seiler's solution or other mild alkaline solutions. If the membrane is very extensive, the excess should be gently removed so as not to injure the mucosa. In between treatments the mucosa should be well oiled with albolene containing one per cent. camphor and menthol.

Constitutional treatment consists in the use of tonics; general hygiene, diet and the intestinal tract should be looked after.

5. *Hypertrophic rhinitis.*—This condition is characterized by a hypertrophy of the mucous membrane of the inferior turbinates resulting in a partial stenosis of the nasal cavities. If a deviated septum is present, accompanied by a sinusitis, a hyperplasia of the nasal mucosa results due to irritating discharges. In other words, we may have a hyperplasia with a hypertrophy of the nasal mucosa and either one predominating.

The etiological factors here may be the same as in simple acute rhinitis and turgescent rhinitis.

The treatment is purely surgical and consists in removing the obstructive lesions. The cautery is contraindicated.

6. *Hyperplastic rhinitis.*—The characteristic thing here is the thickening of the nasal mucosa due to prolonged mild irritation by secretions from the sinuses and is frequently confounded with hypertrophic rhinitis. The mucosa microscopically shows an increase in the number of cellular and connective tissue elements; whereas, in hypertrophic rhinitis, the cells are increased in size due to overnutrition.

The cause of this form of rhinitis is chiefly due to the contact of the septum and the middle turbin-

ate, causing pressure resulting in a retention of secretion of the sinuses and eventually producing a sinusitis. The secretions are serous or mucus rather than purulent. Polypi usually develop later.

The treatment is essentially surgical and consists in removing the obstructive lesions. With this procedure, treatment of the sinuses are instituted if a sinusitis is present.

7. *Caseous rhinitis.*—This form of rhinitis is due to a foreign body in the nose which is usually wedged in between the turbinates and the septum surrounded by a mass of granulation tissue. Behind this mass exists this form of rhinitis. These cholesteatomatous masses become infiltrated with salts of magnesium and calcium forming rhinoliths. The cheesy material in the nasal passages emit a disagreeable odor. This is mostly seen in children and is usually recognized by a unilateral discharge with symptoms of difficult breathing, headaches, earaches and reflex phenomena.

The treatment consists of a cleansing douche, then cocainization of the nose preparatory to removal of the foreign body. The mass is removed with a spoon shaped wire loop, snare, forceps or rongeurs, depending upon the size and character of the foreign body.

8. *Atrophic rhinitis.*—This form gives a characteristic picture showing sclerotic changes of the mucous membrane and the underlying bony structure, with the presence of crusts and a characteristic foul odor.

Simple atrophic rhinitis is characterized by the involvement of the trophic nervous system and consequently the nutritive condition of the mucous membrane is impaired. The etiological factors are at times uncertain but it is frequently due to lues or tuberculosis. The treatment must be directed toward the constitutional cause if found and treated accordingly. Lues and tuberculosis must be eliminated and operative procedure avoided.

Every cause hitherto mentioned may be the etiological factor of atrophic rhinitis due to suppurative sinusitis. These factors produce a decrease of the normal circulatory properties of the nose due to inflammatory reaction and is followed by a formation of connective tissue. The functional processes are either impaired, perverted or entirely lost with the result that the true mucus producing elements are destroyed. The secretion becomes thick and inspissated, dry upon the surfaces and develop the characteristic crusts with the ozenic odor. This odor is due either to decomposition of the mucopus or the presence of certain microorganisms.

Treatment is not extremely satisfactory and if the sinusitis accompanying this condition is advanced, all treatment is apparently in vain. Surgical interference should be avoided as much as possible as it will tend to make things worse.

Local treatment consists mainly in intranasal cleanliness and particular attention should be given to the sinuses. The nose is best kept clean by the use of hot intranasal douches of two per cent. sodium bicarbonate solution a few times a day. For the removal of the crusts, an aqueous solution of ichthyol ten to twenty per cent. on pledgets of cotton packed in the nose is excellent. For stimulation, iodine, argyrol or silver nitrate may be used.

The treatment of this condition with scarlet red was described in 1913 by Joseph Jacobs but apparently the results were not brilliant. This treatment has been modified by making a four per cent. emulsion of scarlet red with quince seed as its base. It is found to adhere to the mucosa and favorable results are reported. Its antiseptic qualities inhibit bacterial growth, thus removing the fetid odor and by stimulating cell proliferation, it tends to restore glandular function. Preparatory to applying this, the patient douches his nose with Dobell's solution or sodium bicarbonate solution. Then the scarlet red emulsion is applied to the entire mucosa and is gently massaged with the applicator. These applications are renewed every other day and it is found that in many cases after the second application, the odor and scabs disappear.

Another method giving fair results is described by Benians and Hayton. Their treatment consists of copious applications of glycerine or glucose or both to the infected area of the nasal cavities and is mainly directed to the odor of the disease. A mixture of pure glycerine with addition of twenty-five per cent. liquid glucose is used and applied copiously to the mucous membrane several times a day. This is first done by the surgeon and subsequently by the patient at home. Irrigating and spraying with a ten per cent. aqueous solution of glucose and glycerine may also be tried. The aim of this treatment is to exploit the activities of such organisms as Staphylococcus albus, which is normally found in the skin and the infected area, to the detriment of the obnoxious coccobacillus of Perez. The bacillus of Perez is proteolytic, while the staphylococcus has a capacity for the fermentation of sugars. This is one factor on which this method is based. The other factor lies in the necessity for tryptic ferments to act on protein substrates in a slightly alkaline medium.

Injections of paraffin have been tried with varied results. Baumgärten reports favorable outcomes by the use of his method in nine out of twenty-five cases. He first cleanses the nose by lavage and under novocaine anesthesia he injects one c.c. of three parts of paraffin and one part of petrolatum, at one sitting. This he repeats at weekly intervals until sufficient narrowing is obtained. The sites for injection are the posterior part of the septum, inferior turbinates, lateral nasal wall and floor of the nose. Ciro Caldero uses white petrolatum, maintaining that this is preferable to the injection of paraffin because of its better tolerance and facility of technic. After preliminary treatment for five to six months consisting of nasal lavage with physiological salt solution followed by applications of one to five per cent. silver nitrate, or iodoglycerine or tampons steeped in bovine bile, he begins to inject the white petrolatum. He reports seven cases with excellent results.

Vaccine therapy has been tried, but apparently with poor results. Pure cultures of Coccobacillus fœtidus of Perez is used. Hofer, however, reports complete cures by this form of therapy and that the restoration was complete and normal. The normal condition persisted after a period of seven years. The use of Bacillus bulgaricus has also been tried but with poor results.

9. *Suppurative rhinitis.*—Suppurative rhinitis or nasal suppuration is really a symptom and not a disease. Pus in the nasal chambers is present in later stages of acute coryza usually accompanied by a purulent infection of the sinuses. It is also found in tuberculosis and lues of the nose and in the various exanthemata. The purulent discharge is seen in that part of the nose that is in relation with the drainage of the different sinuses. If the pus is in the superior meatus, it comes from the sphenoid sinus or the posterior ethmoidal cells; if the discharge is seen in the middle meatus, it may come from the maxillary sinus, frontal sinus or the anterior ethmoidal cells. It is therefore reasonable to assume that nasal suppuration is rarely a primary disease and in reality secondary to a diseased condition of the mucosa, bony wall of the nose or sinuses. This leads to another subject, namely, diseases of the accessory nasal sinuses.

UNUSUAL TYPES OF RHINITIS

1. *Acute coryza of the newborn.*—This is a rare form and the obstruction is caused by a swelling of the pituitary gland and the presence of thick secretions which the infant can occasionally expel. The nostrils are filled with mucopus which flows onto the lips and into the nasopharynx.

As the infant cannot blow its nose, this must be carefully seen to by its nurse. A few drops of boric acid solution and hydrogen peroxide will loosen up the secretions. Argyrol, or colloidal silver solution, four or five drops in each nostril twice a day is indicated. Adrenalin one to two thousand oily solution is used in persistent obstruction.

2. *Gonorrheal rhinitis.*—This usually affects the newborn, the secretions being abundant and appears as greenish yellow pus sometimes streaked with blood. The nostrils are filled with crusts, easily become ulcerated and the nasal obstruction is marked.

The treatment consists in softening the crusts with borated glycerine and the instillation of twenty per cent. argyrol and touching up with two per cent. silver nitrate.

3. *Diphtheroid rhinitis of the newborn.*—This form is rare and is almost always fatal. Examination shows the nasal chambers lined with a false membrane which may extend to and overwhelm the pharynx. The cervical glands are enlarged. There is an abundant watery, seropurulent flow constantly running from the nose, which excoriates the nostril and the upper lip. Death is brought about by the toxemia and inanition. A sudden apneic attack may end the patient's life.

By following the classification outlined and treating accordingly, the results obtained will be worth while. Care must be taken in selecting operative and nonoperative cases. A doubtful or borderline case should be given the benefit of the doubt and no surgical interference attempted until every other means to obtain a cure has been exhausted. If after that period no results are obtained, surgery should be the last resort.

CONCLUSIONS

1. In order to treat inflammatory diseases of the nose intelligently, an exact diagnosis must be made.
2. Operative procedure is positively indicated in turgescent, hypertrophic and hyperplastic rhinitis if obstructive lesions are present.
3. In treating rhinitis constitutional disturbances should be looked for as they may be the underlying causes.
4. In doubtful cases surgery should be the last resort.

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317 East Seventeenth Street.

Droop Shoulders in Adults

With a Report of Twelve Cases

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In this paper there is nothing new or original; neither is there any apology for writing it. It is written in order that we may have brought to our minds again the simple and frequent cause of many of our more or less indefinite pains about the occiput, shoulder, arms and hands, especially those which seem more or less related to certain nerve distributions, such as writer's cramp.

In a study of the shoulder girdle we find imposed over the conical thorax what we have in no other part of the body; a considerable weight supported by no bony structure, the only bone connection to the rest of the skeleton being the clavicle which simply acts as a radius for the shoulder to swing on when it droops. The shoulder is therefore entirely dependent upon the muscle structure for support and this structure is clearly liable to become overtired and consequently overstretched and unable to perform its duties. This condition results in the drooping of the shoulders and with the clavicle as a radius the shoulder cannot swing backward or just drop but must swing downward, forward and inward. The effect upon the underlying structures is evident. If the patient is fat, the pressure upon the nerve trunks may be and usually is general, especially if the patient wears a high corset to push the fat up into the axilla. The tenderness over the subcoracoid bursa is almost constant. Pain is usually complained of about the elbow without any particular tender spots and the hands are subject to cramps which may or may not be painful. Numbness is a very common symptom and usually affects the entire arm and hand. In a thinner subject the pain may be confined to one cord. In these subjects the pain is more likely to be of a sharper variety and refer more definitely to certain nerve distributions. Pain between the shoulders in

the back and occipital headache are very common. Numbness along the distribution of the ulnar nerve is very common. There may be no pain in the arm but muscle spasm, which is manifested in writer's cramp or of spasm of any other one group of muscles. There may be no pain or discomfort due to nerve pressure and the distress may be entirely confined

Fig. 1

Fig. 2

Fig. 1.—Showing front view of brace as applied with brassiere hook to hold lower straps down.

Fig. 2.—Back view of brace as applied. Leather part of brace, white kid on canvas. Arm straps, heavy two inch webbing, lower straps, one inch webbing.

to muscle strain, especially of the trapezius or scapular group or the pain may be confined to the subcoracoid bursa. The bursa has been little spoken of; we talk of the subacromial and subdeltoid bursæ and it is true that they are sometimes affected but the subcoracoid is a much more frequent offender. This is plainly evident from a study of its location and consequent liability to direct pressure especially when the arms are thrown forward as in writing, typewriting, stirring and many other occupations. The effect of droop shoulder upon the circulation is also very evident and very important, especially in the cases of rheumatoid arthritis which we see.

We are not accustomed to look upon a large, full busted woman as the subject of round shoulders, but I am inclined to believe that they are the most frequent victims. This is particularly true of cooks.

Pressure over the subcoracoid bursa in the shoulder will usually show tenderness and occasionally reflex pain to any part of the arm. Of course, all pains in the arms are not due to this condition, as witness the case of Dr. B. which he reported to me. The patient, with severe pain in the arm, was referred by him to Dr. C., with reference to the advisability of removal of tonsils. Dr. C. advised that the tonsils be left alone but also reported that the patient had a polypus in the nose which was infected and that pressure on the polypus with a probe caused a sharp pain to extend down the arm. Removal of the polyp was followed by rapid recovery of the arm.

Our treatment is simple. Remove the pressure by means of a simple shoulder brace and then depend on general rest and tonic treatment. The position in which the patient works may sometimes be changed and no other treatment needed. Again the shoulder brace may be worn only tight enough to act as a gentle reminder that the patient is drooping and she is able to hold herself without the active support of the brace or the overtiring of the muscles. This is, of course, the ideal toward which we work.

Case I.—Mrs. C., of New London, aged forty-two, married, with two children, apparently healthy and in good condition. When twenty-one years old she had what was called a shock. She was unconscious for several hours and thereafter for several weeks was unable to walk or use the right arm, although motion was not entirely gone in any group of muscles. Since that time she had been able to get about with frequent rest.

Three years ago she began to have pain in the back of the neck on the right side, occipital headaches when tired, with pain running down the right arm to the elbow. There was often cramp and numbness in the hand, and tenderness over the subcoracoid bursa. The patient had flat feet, and the knee jerks on the right side were exaggerated. Wassermann was negative. The patient was entirely relieved of pain in the back of the head, the neck and arm by the application of a shoulder brace.

Case II.—L. N., female, aged thirty-two, married. She had had pain for two years between the shoulders, especially when working with her hands; at these times her hands and arms would "go to sleep." There was no particular pain or spasm of any group of muscles. Pain at times was severe at the occipital origin of trapezius. A shoulder brace gave almost immediate relief.

Case III.—Mrs. W. S., aged thirty-nine, married, two children. She had a sharp pain in the left shoulder upon arising on the morning of December 3, 1923. Several months before had had the same condition in the right shoulder. She complained of pain between the shoulders in the back and extending into the occiput; extremely tender over the subcoracoid bursa. A sling was applied on December 3rd, and a shoulder brace on December 6th. Pain was relieved by the shoulder brace.

Case IV.—M. H., of New London, aged thirty-two, single, bookkeeper. He was in an automobile

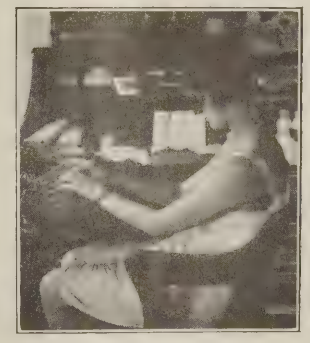

Fig. 3

Fig. 4

Fig. 3.—Position likely to cause subcoracoid irritation.

Fig. 4.—Position less likely to cause subcoracoid irritation.

accident three years ago, which was not considered serious at the time, but the patient failed to recover from pain in the back between the shoulders and in the lumbosacral region. Pain extended down both arms and the arms were numb. The head began to droop and a "bunch" appeared over the last cervicle

and first dorsal vertebræ. X ray was negative; nothing of cartilage or bone pathology was shown. There was tenderness over the subcoracoid and sacroiliac regions, both feet flat. General supportive treatment was applied. A shoulder brace relieved pain and discomfort in the arms, shoulders and neck. The "bunch" disappeared. The abdomen was raised and the general appearance improved.

Case V.—Flora R., aged fifty-eight, single, clerk, for about a year had had pain in her left shoulder with pain and cramps in elbow and hand. The condition continued to increase in severity until the patient was unable to sleep except for very short periods. There was great tenderness over the anterior aspect of the shoulder joint and subcoracoid, and pain on pressure radiating down the arm. A stereoscopic x ray examination of the left shoulder showed a calcified deposit apparently extracapsular in position, lying between the humeral head and the acromium process. A diagnosis of chronic subacromial bursitis was made. A shoulder brace was applied with complete relief of pain. The patient slept all night within one week and since had had no trouble except that after leaving the shoulder brace off for a while there would be a slight recurrence, but the shoulder brace always gave immediate relief.

Case VI.—Mrs. L., of Lee, Mass., married, aged forty-five, weight about 225 pounds, complained of no pain but had cramp in the middle finger of the right hand necessitating pressure with the other hand to relieve it. She wore a high corset which pushed the fat into the axilla. The corset was cut lower and a shoulder brace applied. She wore this shoulder brace for one week without a cramp. She thought she was well and left the brace off after one week, when the cramp immediately returned. She wore the brace for six months and had no further difficulty.

Case VII.—The patient, F. B., came to me in the winter of 1922-1923 complaining of pain in the right arm and the hand "going to sleep." He was thin but had always been well. He sat at a desk most of the time, sitting well back and very frequently having to reach to the left end of his desk for papers brought there by messenger as the left end of desk was nearest the door. There was very great tenderness over the subcoracoid bursa. The patient was cured by turing his desk around and sitting close to it which allowed him to keep the head of the humerus off the coracoid process and prevented pressure on underlying structures.

Case VIII.—This patient came into the dispensary complaining of being unable to sleep all night on account of the painful cramps in his hands. He was well nourished and aside from tenderness over the subcoracoid appeared to be in very good condition. A shoulder brace was applied and recovery was complete in three weeks.

Case IX.—N. B., a dressmaker, aged forty-four, came to me complaining of pain in the arms and hands with considerable muscle spasm in lower arm, also pain in back of head, neck and between shoulders. She obtained almost immediate relief from the use of a shoulder brace but the symptoms returned in from a week to three months after removing the brace when she was working.

Case X.—N. L., aged twenty-eight, a stenographer, had for nearly a year been troubled by cramping of hands when typewriting. This condition grew gradually worse until it became a serious handicap in her work. A shoulder brace gave relief and was worn for about a month when the patient was instructed to sit closer to her machine and had no more trouble.

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Artificial Leucocytosis

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Reports of the control of the white cells obtained through the intramuscular injection of the salicylate of mercury and the intravenous use of novarsenobillon in the treatment of a number of infections, have been published in the *Lancet*, the Medical Journal and Record and in the *Franco-British Review*. These laboratory determinations were done by Dr. Seager Thomas, pathologist to the South Hants Hospital, Southampton, and it was found that after mercury, novarsenobillon and quinine bihydrochloride all varieties of white cells were increased in number, in about the same proportion as they are normally seen. So it would appear that each kind had its particular function in the resistance to infection.

Frequent counts of the blood of these controls showed marked differences in the days following the injection of mercury or novarsenobillon. For example, it was found that the increase after the injection of the salicylate dropped at the rate of about two thousand a day; that after the successive injections in any one control there was a rapidly diminishing power for the stimulation of the production of white cells, so that after the sixth or seventh injection, hardly any increase was to be seen.

On the other hand, in the counts following the increase after the arsenical preparation it was found that the white cells decreased in number at the rate of about five hundred a day, so that the count remained well above 10,000 during the week between injections. Also, it was learned that the body is much more sensitive to the arsenic, in that the successive injections are followed by about the same increase in white cells as is seen after the initial dose. Injections of the quinine were not continued, as it was found to be rather painful, and the controls objected to further study of the effect of this agent.

For the past nine years I have used the salicylate of mercury in various parts of the world with satisfactory results in the treatment of pyogenic infections, as is seen in furunculosis carbuncles, and small

infected wounds. Never was it necessary to give more than three injections, of one grain each, to rid a patient of the infection. For seven years of this time the drug was used empirically, and persisted in, because the infected patients were relieved.

Two years ago I called on Dr. Harry Simson, at that time pathologist of the Borough of Southampton, with the request that a white cell count be made, that one grain of the salicylate be given and another count be done in twenty-four hours. This was done. The count before the injection of the mercury was 9,000 to the c. mm.; twenty-four hours thereafter it was found to be 19,800. Other counts and injections were done by Dr. Simson in the Borough Hospital, and it was found in every case that an increase in the white cells followed the injection of the salicylate. In no case in this series was the increase found to be as great as that of the first control.

In the main, these injections were given by Dr. Simson to patients with chronic otitis media. At first some improvement seemed to be seen, the discharge of pus was increased and rapidly became less and more serous in character. Equally good results did not follow the succeeding injections. So it was concluded that this plan of treatment was not useful for such chronic infections. At this time it was not known that the tolerance was so quickly established, nor that the count declined so rapidly, as no further counts were done on the blood of these patients.

Through the good offices of Dr. Frank MacGee, medical officer in charge of the Atlantic Park Hotel for the detention and inspection of transmigrant immigrants to the United States and Canada, and Mr. Arthur Zorab, consultant, this plan of treatment was tried in the detained cases of trachoma. Improvement was marked after the first few injections, becoming less and less with their continuance. The usual local treatment with copper sulphate or cyanide of mercury was done in all these cases by Dr. MacGee.

When it was found that a tolerance was established after a few injections a rest was given these patients from the injections of the mercury, the local treatment being continued by Dr. MacGee. Five or six weeks later injections of the salicylate were again given, and again noticeable improvement was to be seen, which became less and less with each successive dose. About twenty-seven out of the thirty-one patients on whom this plan was tried were finally thought to be well and were permitted to embark for Canada and the United States, where they seem to have passed all inspecting officers as being cured of trachoma.

With the knowledge of the well known effect of the use of mercury in the treatment of syphilis and the observation of its effect in the treatment of trachoma, two facts seemed apparent in both infections; first, that the greatest improvement was to be seen after the initial doses; second, that the counts of the white cells showing the rapid establishment of the tolerance would seem to explain why so good an effect was not to be seen after the later doses; that the greatest good follows the greatest increase in white cells. Does not this observation agree with all the teaching and experience in the use of mercury, that it must be used in series of doses with rests between each series?

I became convinced that mercury was not a specific; that it had its effect, not from any property in itself, but solely from its power to stimulate the purely natural powers of resistance of the body, as represented by the only agents that may be seen in this phenomenon of resistance, the increased number of white cells.

In the attempt to extend the use of the white cells, the principle was applied in the treatment of asthma, eczema, chronic bronchitis, pyelitis, ulcer of the stomach, abscess of acute otitis media, influenza, ulcers of the leg, both the simple and the socalled varicose ulcer. Results were satisfactory.

While these results were being seen a friend had his usual recurrence of hay fever. On the belief that this infection might also be amenable to an increased number of leucocytes, he was given one grain of the salicylate of mercury. The good effect was immediate and lasted for six days. No counts of his blood were done but it had been learned that on the fifth or sixth day after an injection the white count returned to normal. He was given a second injection and the effect was not nearly so good as after the first.

In all of the cases mentioned above the striking similarity in the action of the first doses of mercury and the results that one sees following the use of salvarsan or its equivalent was apparent. So on the belief that novarsenobillon would also stimulate the production of white cells and probably do so better, he was given .45 of this agent. The infection was not cleared up at once but it became better and its further course was so modified that he had the best year he had had for fourteen years.

Five years ago I was in the service of the American Red Cross in Albania, where one might see many cases of æstivoautumnal malaria. On account of the discomfort following the use of the intramuscular injection of quinine, and having seen neosalvarsan successfully used in the treatment of tertian malaria in Alabama, it was tried in a number of cases around Tirana and Elbassan. Results were satisfactory. The temperature rapidly returned to normal and there was a rapid improvement in the symptoms of the infection.

Believing that all the three specific drugs derived their potency from the same cause, the stimulation of the production of white cells, a call was made on Dr. Seager Thomas, pathologist to the South Hants Hospital, Southampton. Dr. Thomas kindly agreed to do these determinations.

It would appear that the clinical effect of these drugs, as observed and reported by Dr. Seager Thomas, Mr. Arthur Zorab, chief of the Southampton Eye Hospital, Dr. Walter Elliott and myself, shows that they are not specifics. That their power comes from the stimulation of the natural forces of resistance. That whatever other parts of the blood may take part in this act, no one has yet seen them, and whatever they may be, the white cells are the only elements which may be seen, counted, and so furnish a useful indicator of the amount of the resistance and of the prognosis for the particular case. If the attending physician has a control of the forces of resistance, which may be very closely estimated by the increase in one of the elements of that resistance, the white cells, it is of little moment to him

as a clinician what other unseen and unseeable forces are at work. This is a laboratory problem.

On the recent visit of two U. S. destroyers to this port quite incidentally I heard of a case of furunculosis in one of the crew. These small vessels carrying no medical officer, the pharmacist mate was asked to bring the infected sailor to the dispensary. A young, powerful man was brought in, stripped and examined. Three active infections were found on his forearms, two on his buttocks, all of them discharging a slight amount of pus. His body, legs, and back showed many cicatrices of boils that had run their usual course, and many marks of incisions which had been made in the treatment of the *effect* of the infection. His history, recorded, showed that the condition had lasted for five years, during which time he had had all manner of treatment in naval hospitals, on shipboard, vaccines, and all of the usual procedures in such infections. The buttocks and a good part of the lower back were infiltrated with blood and it was altogether a very unhealthy skin. I gave him one grain of the salicylate and instructed the mate to give him two other injections at ten day intervals. The vessels sailed the next day for Copenhagen, where they were joined by the cruiser *Preston*. A letter was received from the medical officer of that vessel, Lieutenant B. W. Harris, a few days later, saying that he had seen the patient for the first time, who then showed a few rudimentary infections of the skin, that the boils that he had had were all cleaned up and that the infiltration of the skin was rapidly disappearing. After the third injection a letter from Gillette, the pharmacist mate, reported that the patient was apparently well; the infiltration of his skin had completely disappeared and he was feeling better than he had for a long time. There was no evidence of any luetic infection to be found in my examination of this patient.

In April, 1923, the nineteen year old daughter of a friend of mine in Southampton started showing an evening temperature. After several weeks' observation the attending physician, Dr. Fisher, made the diagnosis of a probable tuberculous infection of the apices of both lungs. The patient was sent to the Isle of Wight, where she spent the summer, having the usual treatment in the open air. She returned to Southampton in the autumn, running a temperature around 101°. About this time the results of the injection of salicylate of mercury in increasing the number of white cells was demonstrated. This was reported to Dr. Fisher and he decided to use this principle in the treatment of his patient who, at this time, was confined to her bed. After the first few injections the average evening temperature was brought down to 100° or less. There was no noticeable effect from the last of the nine doses that were given her in this series.

Beginning in February, 1924, she was given sixteen weekly injections of calcium. Dr. Fisher said there was no noticeable effect to be seen as a result of this agent. No further doses of salicylate were given. During the summer of 1924 the temperature remained well below 100° and she was allowed to spend all the daylight hours in the open air and on the few calls of observation that I made she seemed much better. However she continued to run a temperature.

In December last she developed furunculosis. Dr. Fisher sent to London for a stock staphylococcus vaccine. Weekly injections were begun, and about the second or third week Dr. Fisher noticed on the carefully kept chart that on one evening the temperature was normal. As she continued to have recurrences of the infection of the skin, the vaccine was continued. The next week there were two evenings with normal temperatures. So the injections were continued for about nine weeks when she had a normal temperature every day. Dr. Fisher continued his observation for a few weeks when he discharged her, cured. Would it not seem much more likely that this injection of a stock staphylococcus vaccine stimulated a production of white cells, rather than that the toxins of tuberculosis were neutralized by antibodies from such a source?

The annual report of the United Fruit Company of New York for the year 1924 has recently been published. In this volume is the report of the empirical use of the intravenous injection of a one per cent. solution of mercurochrome, in the treatment of a large number of infections, from ten to thirty c. c. being given in each case according to its virulence and the strength of the patient. Successful results were found in arthritis, cystitis, salpingitis, epididymitis, pericarditis, puerperal septicemia and pneumonia. The following conclusions are drawn:

1. That undoubtedly mercurochrome, properly administered, lowers the death rate in pneumonia.
2. That it hastens the crisis, and shortens the period of convalescence.
3. That practically no complications, such as empyema, result from this method of treatment.

Dr. van Heucelom of Rotterdam gave seven and a half c.c. of a one per cent. solution of mercurochrome, intravenously. The white cell count before injection was 8,000; in sixteen hours it was 9,500.

Dr. H. W. Nott, of Birkenhead (2), has reported successful results following enemata of permanganate of potash, one and a half grains to the pint of water, in the treatment of gastric ulcers, bacillus coli infections of the bladder, asthma, arthritis and a number of other infections.

Dr. Seager Thomas and I gave to a control with a count of 9,000 to the cm. one and one half c.c. of colloidal manganese. In twenty-four hours the white count was 21,000 to the c.mm. Such an increase would seem to be too great to be attributed to the irritation of the injection, so one might very naturally conclude that manganese has the power of stimulating the production of white cells.

I believe that further investigation will show that the administration of agents used in the treatment of infections is followed by an increase in white cells.

"Metchnikoff has insisted since the beginning of his studies upon phagocytosis that this process plays an important, if not the sole, rôle in immunity. He conceives that a true battle takes place between the cells and the invading germs. When phagocytosis is active and successful, immunity is the result. If phagocytosis is unsuccessful, the result is susceptibility instead of immunity." *Rosenau.*

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The Influence of Physical Disorders Upon Behavior*

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Behavior is an organic response to living. Its manifestations may be temporary or permanent. Constant behavior trends may be regarded as the unified habit patterns acquired through adaptation. Behavior in an acute episode is a temporary deviation from the usual norm. Behavior in this sense is conduct in its external relations. Evenness of performance, after frequent repetition, constitutes habit. The regularity of the heart beats, the pulmonary rhythm, the equilibrium of metabolism represent bodily habits upon whose chronicity physical health depends. When any organ of the body deviates from its accustomed course, its behavior creates an acute condition for which relief is sought.

Dermatitis may arise from the ingestion of various foods or drugs, from vaccinations or injections of antitoxins, from contact with poison ivy or sumach, or chemicals such as mercury, phenol, wintergreen and the like, or even from exposure to heat or cold, water or oil. Susceptibility to these various irritative actions varies in different individuals and in different areas of the skin in the same individual. The skin lesion may be directly responsible for numerous acute disturbances of behavior during the period of inflammation. The knowledge of a susceptibility to specific types of dermatitis may cause permanent alteration of trends of behavior. This simple illustration indicates one relation of internal and external influences upon bodily activity and psychic reactivity.

The interrelation of somatic conditions and psychic functions is recognized. The principles underlying their interdependence are not definitely established. Similar physical conditions affect different individuals variously, so that it is difficult to predict the results of physical disorder upon behavior. The same type of physical abnormality, occurring at different age periods in the same individual, is not necessarily attended by an identical series of psychic responses. There is always reason for caution in interpreting concomitant physical and psychic symptoms as having a real relation of cause and effect. Obviously malaise, torpor, irritability and delirium are related to febrile states, and various forms of infection, inasmuch as the psychic manifestations disappear with the decline of the physical symptoms. Certain types of infections, syphilis or intoxications, as with alcohol or caffeine, cause definite alterations in the physical, intellectual, emotional and moral status, but it is not possible to account for similar psychic dysfunctions by assuming such definite causations. Whether one is dealing with an acute or a chronic infection, a physical defect or a deformity, an injury or a dietetic deficiency, it is requisite to estimate the part each plays or may play in determining personality attributes. It is true, generally speaking, that the state of health modifies innate potentials or strivings, and that an improvement in physical status conduces to more favorable conditions for that indefinite integrated activity, termed normal behavior.

Behavior is not to be regarded as entirely bound up in problems of delinquency. It is to be viewed in terms of functional responses to the demands of social living. Physical inferiorities long have been regarded as factors in criminality despite the fact that similar inferiorities exist among a large proportion of the noncriminal population. Overdevelopment may be a serious factor in leading to antisocial conduct or it may be an entirely negligible factor. Generally speaking, exhibitions of irritability most usually present some physical basis for the lack of functional equilibrium. A considerable amount of mental dullness arises from physical causes. Defective vision, hypertrophied adenoids, impacted or abscessed teeth, chronic infections, abnormal endocrine function, and undernutrition variously handicap intellectual activity and conduce at times to such severe intellectual incapacities as to suggest feeblemindedness. Impaired hearing, arthritis, cardiac disease, or constipation, may result in emotional disturbances and intellectual limitations that combine to materially affect social attitudes and social behavior. On the other hand, primarily, psychic insults may result in a series of physical manifestations such as twitchings, paresis, paralyses, blindness, deafness, and almost all other syndromes identified with specific disease processes. Encephalitis presents the physical and psychic symptoms of a large variety of diseases both organic and functional, just as hysteria in its protean manifestations simulates a large variety of organic diseases.

In the interpretation of physical defects, or diseases, therefore, it is essential to differentiate the possible direct and indirect influences involved in reactions upon behavior. Malnutrition, for example, is a generic term, indicative of a state of health in which there are interferences with metabolism, attended by suboxidations and inadequacies in the nutritive values of the blood. The malnutrition may arise from an insufficient dietary, diseased tonsils, hookworm, lack of sleep, tuberculosis, syphilis, chronic nephritis, or from many other causes. If the malnutrition is accompanied by irritability which disappears after the removal of the cause underlying the malnutrition, it is probable that the malnutrition was a major factor in the behavior trend.

It cannot be assumed, however, that the removal of enlarged tonsils and adenoids, or a gain in weight will suffice to check or stimulate specific forms of behavior, even though the bodily improvement is indicated as a step in bringing about more normal physiologic functioning. Numerous instances indicate the value of antisyphilitic treatment in improving nutrition and in altering bodily function with attendant benefits upon behavior, but the treatment also frequently fails to produce the de-

*Read before the American Orthopsychiatric Association, New York City, May 9th, 1925.

sired alterations in behavior without numerous adjustments in the environment.

Encephalitis, with its many late manifestations, merits careful consideration because of our unfamiliarity with its effects upon character. It is a serious disease with profound alterations of personality. The frightful transformations which it produces are indicative of its severe effects upon the central nervous system, and especially upon those elements which determine capacity for moral behavior as opposed to moral judgments. There does not appear a parallelism between the severity of the physical sequelæ and the psychic deteriorations. Prognosis for behavior must be as guarded as that for a complete return to normal physical functioning. It is rare indeed to find a victim of encephalitis free from some abnormality of mental function. The consequent condition may arise from physical slowness and indolence to choreiform agitation, from drowsiness to stupor, from impaired concentration to feeblemindedness, from restlessness to almost maniacal excitement, from truthfulness and honesty to pathological lying and stealing, from slight carelessness in action and speech to exhibitionism and sexual excesses. Not infrequently, following the encephalitis, there is a predisposition to neurotic and hysterical manifestations. It is, of course, possible that the underlying constitution of the neurotic and hysterical might have led to these expressions, if the encephalitis had not occurred, and that the character changes incident to the encephalitis are merely expressions of an organic or functional weakness, partially responsible for the form of expression of the encephalitis. Inasmuch as this disease has come somewhat suddenly into the community, many of its milder forms have been unrecognized, and it is, therefore, important to investigate as to its presence in those individuals alleged to have shown marked and rather sudden changes in personality and behavior.

Fractures of the skull and even mild traumata of the head are recognized as causal in the development of psychoses. They are equally significant in the production of behavior disorders and are frequently overlooked in an estimation of causes responsible for abnormal conduct. In several instances röntgen pictures have disclosed scars of early fractures which had not been recognized at the time of the accident. It is important, in this connection, to comment upon the unwise practice of shortening the period of mental rest for those who have sustained cranial injuries. One must bear in mind the possibilities of epileptiform seizures, handicapping headaches, and hyperirritability as a consequence of insufficient aftercare for those thus injured. The trauma sustained should not be regarded as purely physical, because psychic results follow the physical concussion, laceration and hemorrhage. Not infrequently the secondary results of cranial injuries such as hemianopsia, deafness, and paralysis inject a new set of factors to condition behavior. These are as great an influence in determining behavior trends as many of the marked deformities, congenital or acquired, which play a part in lowering the moral resistances and in lessening general inhibitions. Strabismus, for example, which has occasioned taunting by school mates, has been the indirect cause of murder. Paralyses and hampering speech have been responsible for seclusiveness, isolation and suicide, as well as for begging and theft. Infantile paralysis with leg shortening has induced anxiety neuroses, depression, and paralyzant selfconsciousness as marked as that resulting from an obsessive fear following a psychic assault. Deafness, blindness, impacted teeth, and paralysis of the palate present instances wherein the psychic effects far outweigh the physical disability in hampering social living.

Recognizing the dire consequences of such physical disorders upon personality, it is apparent that malnutrition cannot be assumed to play too large a part in determining behavior. There are popular comments concerning the influence of foods upon character, but exactness in scientific knowledge is lacking with reference to the influences of especial forms of food. The effects of avitaminoses upon physical growth and functional development are slowly being revealed. Rickets, scurvy, beriberi, pellagra and similar dietetic deficiency diseases are yielding much valuable information concerning the relation of diet to behavior. McCollum, in his experiments with rats, has demonstrated that diet affects their emotions and dispositions; certain forms of diet, in fact, leading to practices of infanticide. It is possible, therefore, to conceive that malnutrition is not directly the conditioning factor so much as some specific lack of dietetic necessities. This is emphasized, for example, by the effects of iodine deficiency in the causation of goitre, the results of a lack of calcium, phosphorus, or iron in the production of various physical deficiencies. Careful studies of the effects of prolonged undernutrition in Germany, Austria and Russia might yield valuable insight into the influences of specific nutritional disorders upon the behavior of children, as well as upon their physical structure and function.

The secondary effects of physical disabilities upon behavior are to be interpreted in the light of their duration. There is a vast difference between acute, temporary, and curable disabilities and those which may be chronic in influence, despite some degree of amelioration, and those which are permanent and unalterable. Not infrequently the psychic effects of physical disabilities produce serious changes in behavior. This occurs, for example, among choreics and children with pseudoepileptiform seizures following accidents. The handicap that arises from interference with righthandedness, involving reeducation as a sinistral, may be productive of emotional disturbances leading to behavior types definitely disadvantageous. The tendency to convert natural sinistrals to dextrality is to be deprecated in view of the frequency with which the nervous strains involved interfere with normal selfexpression. Physical thwartings are no less significant than the interferences with conscious or subconscious choice. The relation between physical organization and conscious activity suggests the bearing physical limitation has upon psychic development, and the handicaps that are placed upon normal satisfactions arising from ex-

istent instinctive trends. The opportunity for mental conflicts between the ego and herd instinctive reactions is increased with emotional reactions that profoundly affect behavior. It is apparent that a speech defect such as stuttering, may be more devastating than the amputation of a limb.

Many alleged psychogenetic disturbances have their origin in physical factors. Some may be due to the effects of toxins, while others arise from biochemical alterations incident to metabolic or endocrine imbalances. Another set has their foundations in skeletal, muscular or visceral dysfunction from organic causes. One often finds vicious circles in which the original physical defect is accompanied by psychic reactions which, in turn, increase the physical incapacity, with a secondary increase of the psychic difficulty; these lead to manifestations of behavior in which the psychogenetic elements appear to be dominant. It is of the utmost importance, therefore, to analyze the physical constitution in terms of structure and physical function, before determining that the point of successful attack lies in the psychic field. A careful study of the sensory system, powers of coordination, the nature and extent of respiratory, circulatory and excretory disturbances is prerequisite for the interpretation of behavior. If too large a degree of attention is focused upon the endocrine systems, a considerable degree of information may not be given due valuation. An asthenia, attributed to hypoadrenalism, may prove to be caused by enlarged bronchial lymph nodes. Conditions simulating hyperthyroidism or hypothyroidism may be due to dietetic inadequacies and only the determination of the basal metabolism will serve to differentiate them. Hereditary variations of height, weight, and form indicate the danger in placing too great dependability upon the use of thyroid or pituitary substances for securing alterations in behavior, instead of educating for adaptations essential to normal behavior.

It is needless to point out the various overlappings of physical influences in the production of emotional reactions and the consequent social relationships. At the present time our knowledge of the functional factors entering into behavior is admittedly inexact and inadequate. Careful judgment and interpretation are required to estimate the direct influence of physical states upon mental function. Behavior is the resultant of numerous forces acting upon innate potentials. In the analysis of these forces, one cannot consider them individually, but in terms of their reciprocal effects. Certainly the foundations of life are contained in bodily organization. Whatever interferes with normal structure or function must play a part in the development of the total nervous system. The effects of these alterations are difficult to determine at the present time, but it would appear to be a basic principle, that every physical fact must be considered in relation to behavior. Whether one thinks in terms of the intellect, the emotions or social response, it is necessary to have an understanding of the potentials of physical abnormality and dysfunction in stimulating or inhibiting activity, either directly or indirectly.

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The American Stomatological Movement in International Activities*

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I was going to write about the American stomatological movement in its relation to international activities, but due to the fact that some special and important problems have been discussed in the dental press and at various meetings recently, I think it advisable to concentrate on one of the most important and vital problems of dentistry in the United States today. This problem is the education of the dentist of the future.

First and foremost, the American Stomatological Association stands firmly behind the dentist. The aim and function of the association is to help dentistry to help itself. When we maintain the need of an M.D. degree for dentists, we mean the need of an M.D. degree for all dentists, not a special group or class of practitioners of our profession. We stand on the same platform as that of our European confrères. Stomatology has been victorious in Italy, and as a result dentists must have the M.D. degree to practise this branch of the healing art.

I have a letter here from Professor Piperno of Rome, the leader of the Italian stomatologists, which will give you a good idea as to how Italy feels with us in regard to this matter. It reads as follows:

To the officers and members of the American Stomatological Association, New York City:

The announcement of the establishment of a Section of Stomatology in the leading medical school in New York city has given me great joy. This is a very important step for the future success of the stomatological movement. "It is logical and useful that dentistry finally enters to be a part of medicine, as all other studies of the human body," said recently our greatest Italian clinician, Professor A. Murri. The Italian stomatological victory is now followed by the American movement. Of course, with pioneers and leading men as you are, success will not fail. My deepest greetings to all the officers and members of the association and to the editorial staff of the *Review of Clinical Stomatology*.

(Signed) Arrigo Piperno, Editor *La Stomatologia*.

I also wish to read to you a letter from Dr. J. Sim Wallace, of London, with whose work on stomatology you are all familiar:

At your next meeting, I should be very glad if you will convey to the members, on behalf of the English stomatologists, my warmest congratulations on the progress of stomatology in the United States, for which your association is doing so much. We are looking forward with the very greatest pleasure of seeing and meeting your representatives who are coming to England this summer.

(Signed) J. Sim Wallace.

This is the attitude of all our European colleagues to our activities, and when I speak of this problem of

*Read before the American Stomatological Association, New York Academy of Medicine, April 14, 1925.

medical education for the dentist of the future, I speak on behalf of the international stomatological movement, which represents twenty-eight countries, as well as on behalf of the American stomatological movement. Their problems are our problems. This problem arose when the term stomatology was introduced into medical literature in Germany in 1856-1867 for the first time.[1] The official recognition of the terms stomatology and stomatologist replacing those of dentist, dental art, dentistry, and odontology took place in Hungary in 1906.[2] In France, the authorities have recently substituted stomatologist for the old term dentist, pertaining to the regulations of dental service in the hospitals of Paris.[3] This question is now before the French dental surgeons throughout the whole of France. They, too, have to take care of the dentists in France, and it is from the joint cooperation between the stomatologist and the dentist in France that we hope the solution of the problem will come.

The problem is made more complex by confusing the issues involved. The situation can best be cleared by presenting the facts as they actually exist in the different countries. In France a law was introduced in 1892 to regulate the practice of dentistry and we have there the *chirurgien dentiste,* who has a diploma but is not an M.D. graduate, and the stomatologist, i. e., who is a physician who practises dentistry. In France the aim is now to have one degree, the M.D. degree, for all who practise dentistry. In Germany there are the graduate dentists or surgeon dentists (*approbierte Zahnarzt*) who are not M.D.s; graduates in medicine who practice dentistry but have not received the degree *Zahnarzt,* and the dental mechanic, the *Zahntechriker,* who practises dentistry without a diploma. In Belgium and in Switzerland a diploma is required. In England, on July 28, 1921, a law was enacted prohibiting the practice of dentistry by unregistered practitioners. This gave the dental mechanics, practising dentistry at that time, an opportunity to qualify and become registered and licensed dentists. Now we have there the graduate dentists or the licentiates (L.D.S.) and the non-graduate dentists (unregistered dental mechanics). There is also a third group, the stomatologists, who are graduates in medicine, practising dentistry. The dentists devote their practice to the care of the teeth, while the stomatologists devote themselves to the care of the mouth.

Here the oral surgeons advocate a medical degree for those who wish to practice the surgical branch of dentistry. At the same time they have given the impression that the dentists are to be identified as mechanics, and for them the D.D.S. degree is sufficient. While we believe that a medical training is necessary for the practice of surgery of the mouth, we also maintain that the medical training is equally important and indispensable for the treatment of the nonsurgical diseases of the mouth. We find, for instance, that in Germany the nonsurgical diseases of the mouth are under the care of men medically trained. And besides, socalled oral surgery is only one aspect of stomatology, which embraces every branch of dentistry. The consideration of the non-surgical diseases of the mouth must receive equally serious attention from the medically trained specialists of mouth diseases, the stomatologists or dentists. By that we mean, not merely a dentist with a medical degree, or a medical man with a dental degree, but what we aim at is a dentist, having had a medical education, a hospital experience, and what is most important of all, a medical point of view. We find many dentists practising the surgical branch of dentistry, who have a medical degree, but yet maintain and uphold the mechanical standard, and have the mechanics point of view.

We hold that dentistry should retain its unity, and that there should not be required for one group of dentists one standard, and for another group of dentists a different standard. One standard—a universal medical educational standard, the standard upheld and required of all ethical medical specialists in the United States. It is the standard of American scientific medicine. What logical and scientific grounds are there offered for the exception in our specialty? A medical educational standard should be maintained by the entire dental profession. By giving a small group of the profession this special equipment the cause of dental science will not be furthered. It will simply complicate matters and set up the surgical branch of dentistry on a medical level, and ignore the nonsurgical aspects of diseases of the mouth. This will mean a repetition of the error committed in 1839, when a duality of the healing art was established by separating dentistry from medicine.

The American Stomatological Association is not interested in protecting professional interests or professional groups; it is interested primarily in the protection of the interests of public health, and we believe that the dentist should have the opportunity and the facilities should be given to him in order that he may take his place as a medical specialist, equal to the ophthalmologist, rhinologist, and otologist. We maintain that the unity of the dental profession should be preserved and its autonomy, as a specialty of medicine, be kept intact. Only by unifying the standard in education and training and enabling the entire dental profession to obtain the necessary medical training will we be able to serve most efficiently the cause of public health.

33 West Forty-second Street.

[1]Central-Zeitung, 1856-1867. "Vortrage uber Stomatologie."
[2]Ministerial decree, December 22, 1906.
[3]Revue de Stomatologie, July, 1923.

Four Cases of Exophthalmic Goitre Treated with Insulin.—R. D. Lawrence (*British Medical Journal,* October 25, 1924) treated four cases of exophthalmic goitre with hyperthyroidism with large doses of insulin, using sixty to one hundred units a day. The insulin was well borne and caused no inconvenience. Two of the patients were greatly improved, one being practically normal on discharge from the hospital. In both the disease was uncomplicated and of less than a year's duration in women under thirty years of age. It seems unlikely that their improvement was spontaneous or caused by any factor other than insulin. The other two patients were not essentially benefited, although one gained much in weight and felt better. They were cases of toxic adenoma of the thyroid occurring in women of about fifty and of over a year's duration. The treatment was carried on under strict standard conditions of diet and close blood sugar control.

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The Surgeon's Heritage and Outlook*

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Raleigh, North Carolina

Within the last quarter of a century the average life of man has been extended from forty-three to fifty-eight years. Analysis of the figures seems to show, on the one hand, a gain in the reduction of infant mortality, an increased saving of those under the age of five years; and on the other, an addition of eight years, which has occurred in the last twelve, among those who have had periodic health examinations.[1] May it not be claimed that modern surgery, too, has had much to do with man's longer lease of life? The period in which life's span has been lengthened corresponds closely with the rise of refined surgical science, which had its share in reclaiming many who otherwise were doomed to die. And the end is not yet. We are today losing but a small fraction of the early operative cases; it is our further aim to save the hundredth man, and to cut down the number of those needing surgical interference.

In spite of notorious prognostications to the contrary, progress in surgery has been made. Erichsen, an English surgeon of Danish birth, in 1855 voiced the feeling of many of his day when he said that the practice of surgery then had reached its climax and that no further advances in the art would be possible. How wide of the mark he shot, those of us now living can testify. Many more of us might now be tempted to make predictions but for the fate of Erichsen's view.

Generalizing is dangerous and prophesying is futile. Nevertheless, one may find profit in recalling past performances and in looking forward to future possibilities. Satisfaction may come from hearkening to the old refrains, that history repeats itself and that we can judge of the future only by the past. But are these sayings literally true? Much more delightful it is to believe that history betters itself, for we fain would hope that the conditions of yesterday are not good enough for the people of tomorrow. Moreover, if we are to judge the things of the future only from what has already happened, we shall more or less be living in the past and erecting our ideals upon bare experience. On the other hand, should we become fully pleased with the present, we shall likely feel no desire for improvement.

The science of surgery has been a late development. It was ushered in by the advent of anesthesia and antisepsis. It is now being brought to its highest degree by associated studies in other branches of medicine. Like all real progress, that of surgery has been subject to rules of action and reaction; sometimes it advances, sometimes it recedes, but always it looks forward; it throws aside what has proved to be false and picks up what may be true; it resolves not to guess, but to try; it inspires its followers to feel miserable today, if they have failed to learn something they knew not yesterday. The ebb and flow of the surgical tide has caused us to take up the old, if it were genuine, and to discard the new, if it were spurious.

But even the present proud position of surgery is no altogether new and sudden growth. Behind it is an ancient and honorable inheritance. Surgery as an art began with the dawn of recorded history, and even before; for prehistoric skulls show signs of operative skill and there have been preserved many specimens of primitive instruments used in the operations. In the earliest times cupping was done, abscesses were opened, cataracts were punctured and amputations were performed, at a time when tribal mutilations and ritualistic procedures were practised.

Tracing surgery back to its very beginnings, we find that in the earliest known records of man instruments made from sharpened stones, fishes' fins and teeth, from thorns and hard wood, were employed for various operations. The first known evidences of surgical procedures were derived from the Egyptians, who are not believed to have opened the cavities of the body, but who did perform circumcisions and other external operations. The Hebrews were versed in wound surgery, and were known to have practised Cæsarean section and excision of the spleen. The old Hindus, however, were ahead of all other peoples of their time in operative surgery. They were particularly adept in cataract extraction and plastic surgery, and brought their teaching methods to a fine state of artistic perception. Among the Chinese, surgery lapsed, for their religion prevented them

*The Jerome Cochran Lecture, delivered before the Alabama Medical Association at Birmingham, April 22, 1925.

[1]These statistics were obtained from the American College of Surgeons and the Metropolitan Life Insurance Company.

from drawing blood or scarring the body. Greek surgery was first chronicled in the grand epic of Homer, who placed the surgeon and his art on a lofty plane. Out of this background culminated the great Hippocrates, whose surgical knowledge and skill would have done credit to a later day. The Roman period represented by Celsus brought to notice the use of the ligature. Among the Mohammedans and the later Jews surgery did not go forward on account of the Oriental idea that it is "sinful to touch the human body with the hands" and of the injurious teaching that surgery "is an inferior and separate branch of medicine." The special feature of Arabian surgery was the introduction of the cautery instead of the knife for making incisions. An early Italian surgeon brought back the knife into general use, proving again, in the light of the recent movement to restore the cautery knife, that "nothing is so new as what has been long forgotten."

Coming to medieval times we find that the inferiority fetish caused surgery to be left in the hands of barbers and mountebanks, from which low estate it has been lifted up by devoted workers who have proved their faith. Look where you will you find that surgery has pointed the right way, has blazed the trail in any medical advance, but that it has always recognized its needful association with internal medicine. Attempts at separation of these two great branches of the healing art have left medicine helpless and surgery degraded.

There was a time when the surgeon operated under the direction of the physician who considered himself of a superior order and told the surgeon where and when to cut, where and when to rub or to bleed. Thus came into existence the barber surgeons, employed first to shave the monks and later to perform the offices of woundhealing and bloodletting. As they developed in skill and extended their field, the barbers were held in contempt by the few trained surgeons of the day and their practice thereby was limited. The elevation of the barber surgeon in France to the higher rank and the formation in England of the guild which finally grew into the Royal College of Surgeons constitute a familiar story.

With the revival of learning, the status of surgery once more came into its own. Marking this period is the beginning of German surgery, the full blooming of the Italian anatomists and the betterment of surgeons and medical schools in France. The real surgeons of the Renaissance were few and far between, but their influence was felt in their independent stand against the errors and superstitions of the time. The heroic Ambroise Paré is the dominant figure of this era.

Pushing further along, surgery proceeds through the next two hundred years hand in hand with the growth of literature, science and art. England and Holland led the way with physiologic and biologic discoveries directly bearing upon surgical practice. Anatomy was the principal topic of published papers and there are few references to surgery itself. The surgeon had not yet emancipated himself from his subdued station, though by individual effort some had adorned their art with respect. The latter half of the eighteenth century brought forth, in France at least, the recognition of the surgeon as the scientific and social equal of the physician. The King's illness and his cure by a surgeon secured the Royal decree in 1724 for establishing surgical professorships, for excluding barbers from practice and for creating standards. In England and Germany this restoration occurred much later and reached its ideal more slowly; the British surgeons, well educated in the arts and possessed of rare qualities as clinical teachers, presently adding great impetus to the growing art of surgery. The one man of this age who placed surgery on the solid foundation upon which it since has rested was John Hunter.

The modern era opens at the threshold of the nineteenth century with English surgeons in the lead and London as the mecca of the surgical world. Developing almost contemporaneously were a cluster of surgical stars in France and Germany and the first glimmerings of the art in America and Russia. The surgeons of this period were masters of their craft, bold in conception and fearless in execution. They did amputations and ligations, and performed plastic surgery with artistic skill. Individualistic study was giving way to collective scientific effort, and yet the highest type of surgeon was in the making, largely through the inspiration of Hunterian methods and pupils. Our own country can lay claim to the birth of surgery as applied to the diseases of women and to the perfection of surgical anesthesia. The names of the gifted pioneers who had a part in all these epoch making procedures are too well known even to need mention in this presence. But the greatest glory of the time—and perhaps of all time—goes to Joseph Lister, who introduced antiseptic surgery to a waiting world and rendered possible the development of surgical technic as we see it today.[2]

This running account of the evolution of surgery has dealt with races and nations and epochs rather than with individuals who have contributed to the cause. Three illustrious names were mentioned—Ambroise Paré, John Hunter and Joseph Lister. Concurring in the opinion of F. H. Garrison I hold these three to be the supreme surgeons of all the ages. It was the heroic Paré, valiant Frenchman, who fought for the privileges and the principles of surgery and paved the road along which the newer practice of the art might travel; it fell to the lot of the rugged Scotchman, John Hunter, to open the whole of nature to surgery by his clear thinking, his prodigious work of investigation and his profound delving into the subjects of physiology and pathology; it remained for Joseph Lister, the Briton, to crown the achievements of his predecessors by making it safe for all surgeons everywhere, then and now, to perform their marvelous works. It is to be noted that not one of these men was distinguished as an operator. Certainly they were possessed of mechanical ability, yet their fame rests upon other talents, and the impress they made upon the history of surgery, such as no others have made, was due to their higher attributes of superior judgment, common sense, persistent effort and ardent worship of truth. For us the lesson of their lives is that there have been many good operators, but few real surgeons. Operative skill, careful technic, manual dexterity are not at all to be decried, but alone they count for little in the balance

[2]I am indebted to Garrison's *History of Medicine* for most of the historical facts presented above.

against pathology, diagnosis and judgment. The careers of surgical geniuses of our own generation, some passed away and some now living, will prove eventually to depend for remembrance upon an enlightened wisdom, a broad knowledge of science and a keen capacity for administration and executive management, and not upon any unusually particular facility in their operating or any special method they invented.

Is it still unwise to predict? Shall we say with Erichsen that there are no new lesions to conquer, no more fields to explore? But what of the coming years? Along what paths will surgery proceed to its fulfillment? Will it be in the direction of more operating or less? Is the surgical profession to rise higher and higher in its ideals and practical results? Shall we become more and more separatists, acquiring superior skill in our mechanical gifts, apart from the study of the deeper and more serious problems of our science? These questions can be intelligently answered only by considering the present tendencies and applying our thoughts unto a vision of where these tendencies lead.

At the outset let us observe with satisfaction the increasing interest of surgeons in the correlated sciences. Even to the most practical of surgeons it is evident that, if he is to be a leader and not a mere hack, he must be versed in the fundamentals of chemistry, biology and physics. And in my view the greatest of his needs is chemistry; not that it is perhaps any more essential to his understanding, but because he has neglected its study and underrated its value. Chemistry is one of the bedrock sciences, in some respects the most important science. Its association with biology is intimate and the surgeon who prepares himself in biochemistry will reap his reward. In physics will be found the solution for many surgical problems to be worked out in the coming times.

It is my firm belief that we are going in the direction of less operating rather than more. Preventive surgery will have its day. But this day will come only when we shall have educated the people to the point of having necessary operations done promptly, so that late operations may seldom, if ever, be heard of. Unnecessary operations constitute the peculiar office of those surgeons who fail to understand that the highest aim of surgery may be the avoidance of operations. Never should the time come when the surgeon withholds his hand, if he can restore, readjust or remove some organ to save life, to redeem health or to relieve pain; but the habit of operating merely because it can be done, or because the patient expects it and even demands it, brings reproach upon our art and deadens him who yields.

Whether we shall see less surgery or more surgery, I believe we shall have better surgery, as we progress toward the lofty ideals now being erected in the name of standardized hospitals. Then, indeed, will practical results improve by leaps and bounds for, along with instruction of the people to seek advice early and often, and the schooling of the surgeon to study his cases, there will be a constant check upon operations to be done and effects to be obtained. More important by far than standardizing the hospital is standardizing the surgeon. There can be no escape from individual responsibility, from the choice for hospital positions of those who by talent and training are worthy to serve. Are we elevating our men as we systematize our methods? Are we not in danger of increasing the quantity of surgery without a corresponding improvement in its quality? Are we perhaps developing many surgeons of average, or even mediocre, ability instead of a smaller number of great capacity? Are we actually progressing? Not more than four months ago a noted pathologist, himself attached to a large surgical clinic, felt impelled to say that the progress of surgery had declined in the past ten years. By inference he attributes this decline to lack of knowledge of pathology before, during and after operative procedures. Emphatically he points out the small attention paid to necropsies in our surgical services and reveals many startling and unflattering circumstances. It would be difficult to set a time beyond which surgery has made no gains; but undoubtedly we are at a standstill in the matter of improvements now in sight. This does not mean, let us hope, that the limits of progress have been reached—only that something different must be unfolded, if we are to clear away the obstacles yet remaining in front of us. It may be old things coming back, rather than new discoveries growing up, to help us forward.

Our surgeon of the future will be deeply concerned with making plain the paths of surgery instead of endeavoring to complicate its ways. A severe simplicity, characteristic of strength, will pervade those who come to be greatest. Simple conditions in teaching, making it understandable, not obscure; simple, but efficient, technic in operating; simple methods of treating and dressing wounds—these will be the watchwords. Already we are getting away from putting things in to make it hard and are beginning to leave things out to make it easy. When we bring operative procedure to its irreducible minimum of simplicity we shall avoid innumerable sources of error. The management of wounds resolves itself into the avoidance of irritants, the gentlest handling of tissues, and the use of small dressings properly placed. The value of pressure in surgery is now being recognized as it has not been in recent years. Intermittent pressure, as in massage, is in constant demand; skillful bandaging, almost a lost art, has its virtues; the placing of pads or of the old sponge dressing on each side of a drainage opening or upon certain portions of a wound will often give ideal results. Plastic surgeons are laying stress on pressure for preventing dead spaces as against efforts for perfect asepsis with accumulations under the flaps. Altogether the tendency toward stripping surgery of its nonessentials is discernible. In part it is a reversion to first principles.

Dissemination of information in regard to diseases amenable to surgical treatment must be included in our plans of public education. Even as we teach methods of prevention in communicable diseases through public health agencies, so shall we see the need for spreading from the same source knowledge of surgical affections, avoiding the development of some and advising timely interference in others. By this means we may efface the "too late" verdict, saddest expression of our language. It is just as important to warn the people to have an operation on the gallbladder before jaundice appears or to have

the appendix removed before it ruptures, as it is to advocate means for the prevention of tuberculosis or advise vaccination against typhoid fever. Health boards of the future will come to see that preventive surgery is a part of their program. Deaths in early cases are so rare as to be inconsiderable; deaths in the delayed cases bring reproach upon our art. In no way can the mortality be more surely reduced than by teaching every person to seek surgical advice in time, if he needs it at all, and not to wait until socalled cardinal symptoms become terminal events.

I believe I see in the forthcoming days a resumption of the close association between the physician and the surgeon. Originally, as we have shown, they labored together, but the physician had the say and ordered the surgeon to operate under his directions. When the surgeon struggled successfully upward from his menial position, he took up the burden and the privilege of sharing the responsibility both in diagnosis and in treatment. The internist and the surgeon are now divided in work, but united in spirit, in the common purpose of curing the patient of his ailment. It is true the very name surgery means "handwork," but unless the head guide the hands, they were better never employed. The French definition of the physician as an internal pathologist and of the surgeon as an external pathologist suited the times, the middle of the last century, and suffices for today with both adjectives left off. Could we not best designate a surgeon as a skilled physician and something more? That added attainment is the ability to perform with zeal tempered by judgment all the necessary mechanical services which may contribute to the recovery of the patient. The day of the brilliant operator is done; the day of the genuine surgeon is here.

If there is to be less operating in the future (and there should be), shall we look for fewer surgeons? At present no dearth of surgical aspirants or surgical material seems to exist. Almost every medical student decides at least once in his course that he will be a surgeon. Worthy ambition! The practice of surgery to him is more spectacular, and its results more certain, prompt and evident than those of internal medicine. As the student becomes the practitioner and sees more intimately the different phases of work, he may observe (as in truth it really is) that there is more behind the scenes than he knew of, and that surgery is heavenly when all goes well, but the very opposite when adverse things occur. Some who have gone further along the road, if not of stout heart, may actually capitulate or wish they had had a chance to take in the whole medical field. The towering Murphy in his late years is known to have remarked that, if he had his career to go over again, he would be an internist. This, I take it, does not imply his discontent with surgery, but it represented his overwhelming thirst for new fields of knowledge, his broadening desire to go behind and beyond the mere lesions involved in his operations, his keen interest in the elucidation of the patient's problems.

The younger men in medicine will inherit so many questions for settlement and witness such interesting phenomena in their work of the near future, that they must needs be influenced less by matters of technic and actual operating than by studies in diagnosis and pathology. Urgent problems are pressing for solution and their final success will depend chiefly upon research, investigation and experimentation. The conquest of cancer is one of those problems. So far we have had few results, except those due to educating the public to submit to early examinations and early operations; and much good has been accomplished. But until we find the proximate cause there can be no consistent cure. Operative methods have gone far toward the checking of this dreadful disease, but nothing further may they accomplish in our ignorance of its nature and in our helplessness to diagnose incipient hidden lesions. Cancer undoubtedly will be conquered, but victory is not yet in the offing. The growing bounds of local anesthesia and the possible discovery of other general anesthetics suggest interesting questions. The thought that blood transfusion has been overdone, that it is not free from danger and that it has been useless for some conditions in which it has been widely employed, will put some mind to work upon this pressing matter. To say that radium has not quite met its expectations will cause further activity in this field whose portal we have just entered.

Again, will the specialists within the domain of surgery continue to increase in number? Or will there be a backward trend toward combining separate branches under general surgery? Only time and circumstance can answer. Specialism in general is not a new departure. All through the world's history there have been special men engaged in different fields of medicine and surgery. The Egyptians of old were said to have "had a specialist for every known organ and for every limb." This was an assumed specialism and so artificial and elaborate that it failed of its effect on scientific medicine. Without dispute modern specialties have come about through inevitable growth and they are a fixed part of our medical system. The subdivision of surgery into specialties was also a natural process, but it may be carried too far. The essential factor is that every man essaying to engage in a surgical specialty shall be a trained surgeon, capable of doing whatever may come in his particular work. Deficiency in such training was the cause of the original failure of the orthopedist to advance, but, when prepared men took up orthopedic surgery, it developed into a competent specialty. So much may apply to obstetrics and urology. Let those who would specialize seek first the kingdom of surgery and all the rest shall be added unto them.

Before closing with a final anticipation of what surgery may become, let me say first what I hope it may not be. Emphasizing the value and necessity of research, I would not, however, care to see surgeons developing into a company of purposeless experimenters, a gallery of empiric enthusiasts, extolling the opportunistic method of today and equally eager to adopt the new but untried theory of tomorrow. There can be no progress except by going along novel and, perhaps, unheard of paths; but in surgery such serious questions are involved as to preclude the use of processes that have not been tested and proven by science and by reason. Our art cannot be trusted to those who are inventing modes of mechanics, who are seeking to operate upon something, or whose idea of surgical research is to

perform theoretical procedures. Rightfully directed experimentation is absolutely necessary; the senseless sort is not to be tolerated. Pathological research is the most important of all.

I cannot help expressing the fear lest the practice of surgery degenerate into a business instead of a profession. This must not be. In this country, at least, our clinics and partnerships and groups are bringing us into financial combinations for the direct purpose of facilitating business. And this is all very well, unless the professional side be prostituted to mercenary ends, so that the business of surgery becomes the surgery of business. Are we drifting that way? Hear what a London medical observer, after a recent visit, has said of us: "The Americans are undoubtedly very able business men, and they seem to me to have made a business of the medical profession. There is little of the personal element which we know here. I cannot make up my mind whether this is desirable or not. The patient becomes a case, his wishes are not considered, and he is entirely in the hands of the particular surgeon he consults. Naturally, as in every business concern, the best business man gets into control, but it does not follow he is the best doctor. Again, from a business point of view surgery stands supreme, and the head of the clinic is always a surgeon who makes a final diagnosis, in many clinics pays a salary to other people as assistants, and is intolerant of any suggestion or alteration in his particular methods." Whether accurate in his comments or not, he is certainly frank. Do we recognize the outlines of the picture he paints? It is not the ordinary, sordid, professional commercialism which now concerns us; that is out of the question. The department store, ticket window, tag sale plan may be far more subverting to our ideals, for that it is the tendency of the times and receives common sanction. Is it admirable? A great surgeon, especially a surgical teacher, must develop an organization in order that he may care for the largest number of individual patients. While the master surgeons of the past generation were our equals and perhaps our superiors in manual dexterity, they could not begin to handle the number of cases looked after by the average surgeon of this day. The difference is that administrative experience was not possessed by the older men. Organization methods are essential. Our real bane is the growth of the salesmanship into surgery. Overproduction bids fair to stifle trade in America; overselling is worse, because it creates an unnatural demand. So it is in surgical practice. Salesmanship has no place with us; we have nothing to sell, we have service to render for a just consideration.

A vision of the future surgeon brings to light one who believes that he is not a "born surgeon," but, if so, he "must be born again"; who is surcharged with love for his calling, knowing that ardent desire is the one constant element of success; who realizes that he needs to be grounded in medicine and its allied sciences, giving his eternal allegiance to pathology; who finds as he goes along that good judgment is rather to be chosen than great mechanics; who learns that keeping physically fit is an asset to be sacredly nurtured; who recognizes his dependence upon training, first and last and all the time; and who, being conscious of his glorious heritage, presses on with optimistic courage to the outlook stretching on before him.

Extrapleural Thoracoplasty in Pulmonary Tuberculosis*

Report of Sixty Cases

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The frequent failure of modern sanatorium treatment to arrest the progress of pulmonary tuberculosis when in the ulcerative stage with its usually unfavorable prognosis; the impracticability of pneumothorax therapy in many such patients because of pleural adhesions, and the establishment on the Continent (especially in Germany) of surgical collapse as a definite procedure in suitable advanced cases of tuberculosis, are responsible for the recent merited recognition and increasing advocacy in this country of extrapleural thoracoplasty in chronic phthisis.

The aim of operation is to collapse mechanically one lung by a diminution in size of half the thorax by a paravertebral resection of various lengths of the upper eleven ribs in preferably two stages. The deribbed side of the chest requires support to minimize the paradoxical type of respiration, which always occurs after multiple rib resection. This, in our experience, is best accomplished by parallel adhesive straps over gauze pads, which at the same time permit gradual approximation of the rib ends until they are fixed by fibrous tissue, and later bony union.

Differences of opinion exist at present as to the method of anesthesia, the number of stages in which operation should be performed, the amount of rib that should be removed and whether resection should be performed from below upward or the upper ribs primarily removed, but the essential principle of the operation as developed and standardized by Sauerbruch remains; viz., extrapleural resection of the posterior portions of the ribs close to the transverse processes of the vertebræ.

Sauerbruch removes short segments (four to eight cm.) of the upper eleven ribs, and has repeatedly

*Published with permission of the Surgeon General, U. S. Army. The author wishes gratefully to acknowledge the hearty cooperation and assistance in this series of cases of the following officers of the Medical Corps, U. S. A.; Lieut. Col. E. H. Bruns (medical associates). Major C. R. Pollock, Captains D. G. Hilldrup, O. T. Kirksey and H. A. Bishop (surgical associates).

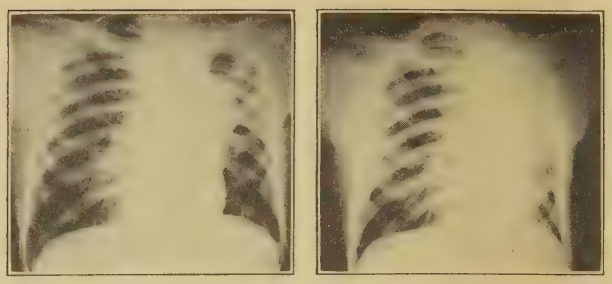

FIG. 1.—Case I. Before and after operation.

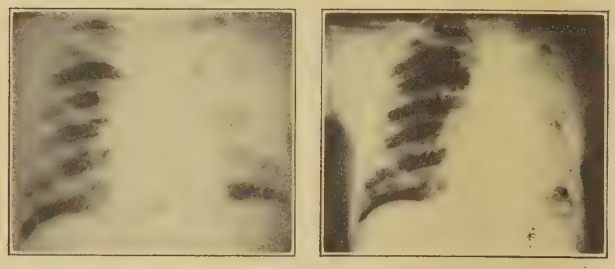

FIG. 2.—Case II. Before and after operation.

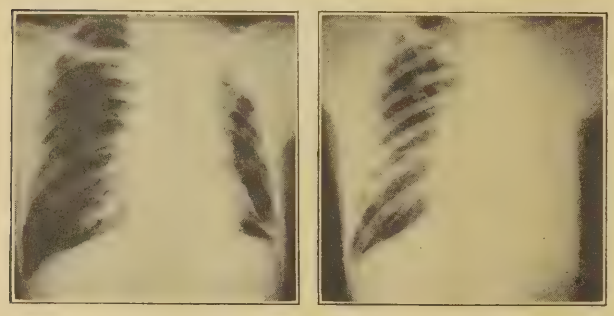

FIG. 3.—Case III. Before and after operation.

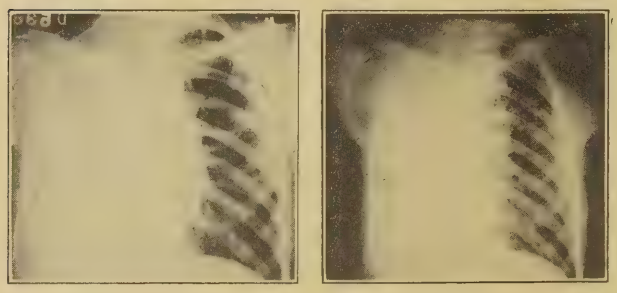

FIG. 4.—Case IV. Before and after operation.

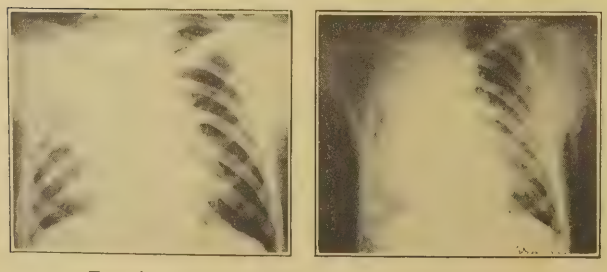

FIG. 5.—Case V. Before and after operation.

insisted that resection always be performed from below upward, as curtailment of the respiratory action of the lower lobe lessens the dangers of basal aspiration and complications. Brauer also collapses the lower lobe first but resects longer portions of ribs, especially beneath the scapula (ten to sixteen cm.).

Lambert and Miller, and quite recently Lilienthal, advise that thoracoplasty be performed from above downward, as the maximum cavitation and involvement in advanced tuberculosis are nearly always in the upper portion of the lung, which should be first collapsed to reduce materially the toxemia of the disease. They also believe that the unrestricted action of the lower chest and diaphragm permits easier coughing and expulsion of secretion from the lungs, and that there is thus less risk of lower lobe aspiration than by Sauerbruch's method.

Our experience with surgical collapse from above downward is limited to five cases, in four of which basal complications developed (aspiration and extension), which were probably due to interference with the respiratory function of the lower portion of the lung, when the upper lobe was primarily collapsed. We have not experienced to date an aspiration complication in the other thoracoplasties of our series, which were performed by Sauerbruch's method, and therefore fully agree with the latter as well as the majority of thoracic surgeons, that the lower lobes should always be primarily collapsed in pulmonary tuberculosis.

Thoracoplasty presents the same general indications as artificial pneumothorax. The patients suitable for operation belong mostly to the chronic fibrous group with cavitation, whose involvement is chiefly unilateral, when pneumothorax is impossible because of pleural adhesions, and whose better lung (with preferably arrested or slightly active upper lobe lesions) is considered competent to perform the full respiratory function without activation or extension of the disease.

Surgical collapse is also indicated in similar advanced cases for recurrent hemorrhages which pneumothorax fails to arrest, and in selected unilateral cases for acute pyopneumothorax promptly after its spontaneous development.

The advantages of artificial pneumothorax over thoracoplasty are: 1, it is a simple and relatively safe procedure; 2, devoid of shock and deformity; 3, collapse of the lung is gradually induced which permits readjustment of the altered thoracic contents with little danger of aspiration, and 4, the collapsed lung can be allowed to expand in event of the development or extension of lesions in the better lung.

Thoracoplasty possesses the following advantages over air compression: 1. Its immediate permanent collapse influences the course of the disease more promptly and definitely, as the degree of lung collapse varies constantly with artificial pneumothorax. 2. The patient is spared the long siege of medical supervision with its many refills necessary by the air method, which in time is not uncommonly associated with serous or purulent pleural exudates, and the serious complications of spontaneous pneumothorax and air embolism. 3. Lastly, it obviates the not infrequent occurrence of reactivation in an expanded lung after apparent cure by pneumothorax therapy.

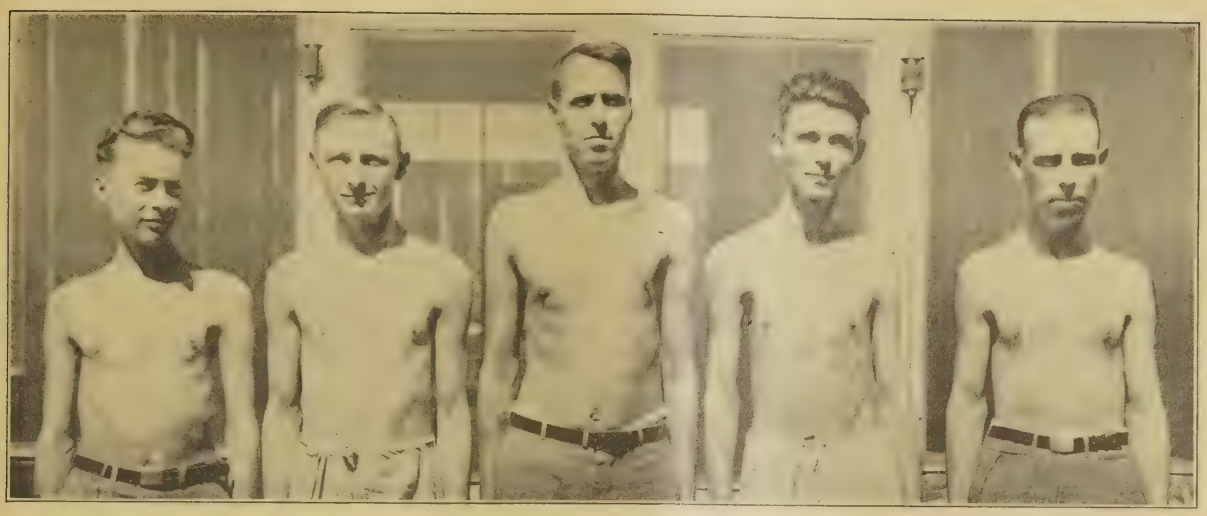

FIG. 6.—Cases I to V (left to right) after operation. Anterior view.

Preoperative measures do not differ from those in vogue for other major surgical procedures, except patients must empty secretions from cavities by posture preceding operation to reduce the danger of sputum aspiration to the minimum. The condition of the better lung and cardiovascular system determines not only the suitability of patients for operation but directly the operative and late mortality.

A single stage collapse is associated with a stormy first week convalescence and a relatively high mortality, due to the sudden marked change in relation of the thoracic contents incident to this extensive procedure, which warrant its performance only in very exceptional cases. A two (and occasionally three) stage Sauerbruch collapse of ten cm. rib resection, with its comparatively low mortality, is in our experience the most suitable method of thoracoplasty for the majority of cases of pulmonary tuberculosis. A wider resection of the Brauer type will usually be required to secure the complete collapse necessary in many patients with extensive cavitation throughout one lung and for pyopneumothorax cases, as well as those of large stature.

Phrenicotomy tests the effect of additional work on the better lung, gradually adjusts the thoracic viscera for the consequences of thoracoplasty, and probably reduces the danger of aspiration; it can be advantageously employed preliminary to surgical collapse in the majority of cases.

Our results in this series of sixty thoracoplasties, eight of which were in females, are as follows:

Disease arrested	30 per cent.
Improved	25 per cent.
Mortality	18 per cent.

Sauerbruch in a series of seven hundred cases reports thirty-nine per cent. cures, twenty-seven per cent. improved, ten per cent. unimproved, four per cent. operative, and twenty per cent. late mortality.

The following five case reports with röntgenograms and photographs illustrate the class of tuberculous patients and surgical procedures of this series of thoracoplasties:

CASE I.—Male, aged twenty-five, tuberculosis five years, active lesions both lobes left with six by eight cm. cavity upper lobe and inactive right upper lobe. Sputum one half cup a day. Two stage left thoracoplasty February 17th and March 20, 1925 (resection one cm. first, seven cm. eleventh, and ten cm. intervening ribs). Lung well collapsed. Patient ambulatory with slight cough and sputum, chiefly mornings;

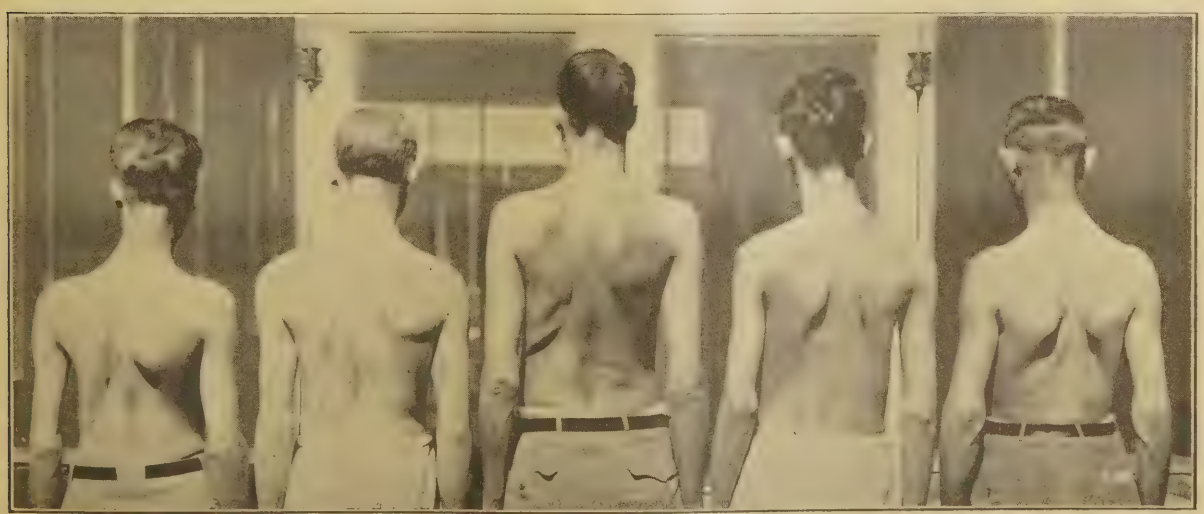

FIG. 7.—Cases I to V (from left to right) after operation. Posterior view.

gaining in weight and improvement in condition has been marked.

Case II.—Male, aged twenty-six, tuberculosis one year, active lesions all lobes left with five cm. cavity upper lobe, inactive all lobes right lung. Frequent hemorrhages of moderate degree. Sputum one third cup a day. Left phrenicotomy November 24, 1924, and two stage left thoracoplasty December 15, 1924, and January 2, 1925 (resection 1.5 cm. first, seven cm. eleventh, and ten cm. intervening ribs). Cavity obliterated and lung well collapsed, no cough or sputum for five months; patient gained fifteen pounds in weight; disease arrested.

Case III.—Male, aged thirty-six, tuberculosis three years, active lesions both left lobes with cavity upper lobe, and inactive right upper. Sputum one cup a day. Induced partial pneumothorax one year ago with slight temporary improvement and small serous pleural exudate. Two stage left thoracoplasty January 6 and April 9, 1925 (resection 1.25 cm. first, six cm. second, 7.5 cm. eleventh, and eleven cm. other ribs). Long interval between stages was due to serum in upper portion of operative wound which delayed healing. Lung well collapsed. Patient now has gained ten pounds in weight and lesions are apparently arrested.

Case IV.—Male, aged twenty-five, tuberculosis two and one half years, active lesions all right lobes with extensive multiple cavitation, slight scattered activity in upper left lobe with small apical cavity. Patient in poor condition with toxic myocarditis and disease a little too advanced for thoracoplasty, but as right lung was practically destroyed by cavities and fibrosis, and left was performing respiratory function, a two stage right thoracoplasty was performed April 17 and May 13, 1925 (twelve rib resection—1.25 cm. first, five cm. twelfth, 7.5 cm. eleventh, and ten to twelve cm. other ribs). Patient now ambulatory with slight cough and expectoration, and his early marked improvement makes us hopeful that a brilliant result will be obtained in this case.

Case V.—Male, aged twenty-four, tuberculosis ten months, active lesions upper and middle lobes right with cavity upper lobe, inactive right lower and left upper loves. Several hemorrhages (forty-five to 175 cm.) last summer. Sputum one cup a day. Two stage right thoracoplasty November 7 and 21, 1924 (resection 1.5 cm. first, 7.5 cm. eleventh, and ten cm. intervening ribs). There has been no cough or sputum for the past three months. The patient has gained twenty-two pounds in weight, his condition is extremely good, and the lesions are apparently arrested.

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Congenital Cleft Lip

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With the increasing refinement of surgical technic and a keener appreciation of the varying resistance of the tissues, those interested in the question of reparative or corrective surgery are no longer content with moderate results, but seek to attain perfection from the anatomical and physiological, as well as the cosmetic viewpoint. Frequently the parents, or those interested in a child who has a cleft lip, are occupied entirely with the cosmetic aspect of the deformity and the many poor results following operation are testimony to the fact that surgeons do not always have a complete grasp of the entire problem or of the difficulties of its solution. It is the duty of the surgeon to bear in mind the fact that the lips and the nose have definite physiological functions, which are largely dependent upon anatomical integrity. In the correction of these malformations it is, therefore, not only a question of closing an unsightly gap in the features, but of doing it in such a manner as to restore the function of the parts with their relation to mastication, deglutition, phonation and respiration. In addition, the method of repair must be planned so as to minimize visible scars, give flexibility, fullness and length to the lip, and to restore symmetry of form and equality of size to the nostrils. Frequently an otherwise excellent result is rendered unsatisfactory by a slight flattening of the nostril, a difference in the size and direction of the apertures, or a break in the continuity of the vermilion border. Sometimes the fact that a lip has been operated upon is rendered obvious by the contrast in the appearance of the mouth during repose and activity, showing itself in the blanching of an old scar or in flattening or rigidity of the lip during conversation or the play of the features. Most often the final result is determined at the primary operation and while it is possible to correct unsightly scars satisfactorily, deformed nostrils and a notched vermilion border, the result is never as perfect as it would have been if the first operation had been done properly.

The deformity of the nose varies in nature and degree with the extent of the cleft in the soft tissues, and is greatly modified by a concomitant malformation of the underlying bony structures. It is moderate in simple, unilateral clefts of the lip alone (prealveolar clefts), in which, although the cleft is of variable length, there is always a deficiency or absence of the muscle tissue between the upper extremity of the cleft and the floor of the nostril, and more or less unshapeliness of the aperture. In this type the nasal ring is complete but the nasal orifice is broad and flat, and there is a small, hollow area consisting of attenuated tissue between the nostril and the upper end of the cleft (Fig. 1, a and b). In

unilateral clefts of the lip and palate (unilateral alveolar cleft of Sherman) there is usually wider separation of the ends of the nasal ring, more marked flattening of the wing of the nose, with varying degrees of buckling of the alar cartilage and deviation of the nasal septum (Fig. 2). By inspecting the nasal apertures from below it can readily be seen that the longitudinal axis of the orifice has been altered from the vertical to varying degrees of obliquity up to the horizontal (Fig. 3, a and b). Bilateral clefts of the lip and palate (bilateral alveolar cleft) have in addition to the flattening and lowering of the nasal wings, more or less anterosuperior rotation of the premaxilla, with elongation of the vomer and nasal cartilages and shortening of the columella and philtrum, Davis (1). There is usually also some deviation of the septum. It should be remarked that in unilateral clefts of the lip and palate, there is usually lateral displacement of the entire nose, toward the side of the long arm of the alveolar cleft (Fig. 4 a). There is always more or less deformity of the cartilage of the wing of the nose with spreading out of the two halves of the nostril. These halves are attached to the subjacent bony margins by a tense adhesion which resists all displacement and which, with the growth of the face, tends to flatten the nostril and change its long axis to the horizontal (Fig. 4 b), so that the wing of the nose, which is drawn outward, is at the same time somewhat lowered.

THE TIME AND SEQUENCE OF TREATMENT

Closure of the lip with preliminary restoration of the alveolar arch in case the latter is cleft, should be undertaken as early after birth as is consistent with safety. If it is considered unwise to close both lip and alveolus at once, restoration of the alveolar arch should be given preference. In a young infant the shock caused by moulding and securing the alveolar arch is less than it will be later; it is much easier to accomplish, and when effected, it establishes the foundation for a good closure of the lip, with perfect restoration of the nose. Lane (2) says that the best time to operate is "the day of birth or as soon after as possible." Ladd (3) advises "as soon as the birth weight is regained." The best indication of the time for operation is a consistent gain in weight, a good state of nutrition, a normal percentage of hemoglobin and the absence of local infection, (Coe 4). In considering the advisability of early operation in its relation to nasal deformity, Lane (2) says, "In order to treat these cases as efficiently as possible, no time whatever should be lost in restoring to the nose its normal physiology, or in other words, in giving back to it the mechanical factor which alone determines its development, and that of the other structures, which are dependent upon it, to a considerable extent, for their normal form." The earlier the cleft is closed and the nose restored, the less liability there is to respiratory trouble and infections of the sinuses. The constant drying of the nasal and pharyngeal mucosa by the entrance of unmodified air through the widely open cleft, renders facile the implantation and growth of microbial life.

THE SEQUENCE

Inasmuch as the primary restoration of the framework is a fundamental principle of plastic surgery, it seems obvious that to secure a normal lip and nose, any existing deformity of the underlying alveolus should first be corrected. Shearer (5) advocates as the first step "placing the bones in normal position and immobilizing them." Morehead (6) states that the correction of the nasal deformity is solved when the bony arch is corrected, thus making a floor for the nose and bringing it into the median line of the face (Fig. 5 a and b), and he mentions depression of the short segment of the alveolar arch and incomplete reduction of the long segment as two of the commonest causes for the persistence of the low, flat, broad nostril, sometimes seen after operation on the lip. If the lip is closed over an open alveolar arch, the patient will indeed be fortunate if he does not have to be subjected to a secondary operation for the correction of a widened scar; thin, flat lip, or unsightly nostril. Thompson (7) insists that correction of the alveolar deformity must precede every other operation, as it is impossible to repair satisfactorily a lip or nose unless the curve of the alveolar border has been restored and the nasal septum straightened.

TREATMENT

The excellence of the final result depends largely upon primary union of the approximated tissues and this in turn is contingent upon the absence of infection and the highest possible state of resistance in the patient. Owing to the location of the field of operation and the impossibility of expecting cooperation, there is a very lively danger of infection. On the other hand this is somewhat minimized by the great vascularity of the tissues of the face, and can be much lessened by the most careful avoidance of trauma. No sutures should be passed through the skin, the margins of the flaps should not be grasped with tissue forceps or crushed by hemostats, and bleeding should be controlled by gentle pressure. Gauze sponges and wipes should not be rubbed over the field, as blood can be removed with much greater gentleness by means of a suction tube.

The cooperation of a pediatrist to whom the nonsurgical care of the infant may well be left, is vital to complete success. It is important that the child becomes accustomed before operation to the nurse who will have charge of it afterward. This is particularly true with older children. This nurse should not carry the patient to the operating room or aid in restraining him during the administration of the anesthetic, as the child's confidence in her will greatly aid the surgeon in the postoperative care. It is also important that the patient becomes accustomed to the method of feeding which will be used after operation, whether it be by spoon or dropper. Sucking should not be permitted for some time before and after operation, as it tends to increase the deformity of the nostril and widen the scar in the lip. Strapping of the lip with adhesive plaster is of doubtful value in my experience and its small benefit is mitigated by the irritation it causes.

In operating on young children I prefer to have them held in the upright position on the lap of a nurse. This seems to aid in establishing the normal relations, the perspective is better and one is less apt to use too brutal force on the maxilla. Ether anesthesia is most satisfactory in children, while infraorbital blocking has invariably been sufficient in selected adults. In unilateral clefts, the repair of

Fig. 1A

Fig. 1B

Fig. 1A.—E. B., seven months old. Incomplete cleft of lip, flat nostril; longitudinal axis of aperture horizontal.

Fig. 1B.—E. B., three years after operation, repair of nostril satisfactory. Redundancy at free border mars an otherwise good result.

Fig. 4A

Fig. 4B

Fig. 4A.—O. L., four years old. Unilateral cleft of lip and palate; buckling of cartilage and deviation of nose toward long arm of cleft.

Fig. 4B.—O. L., showing attachments of ends of the nasal ring to the underlying bone.

the alveolar border in children younger than three months can be accomplished by moulding the long arm back and in by thumb pressure and securing the ends by some form of suture, as recommended by Thompson (7). After three months it is usually impossible to do this and division of the bone in some manner must be resorted to as a rule. The first step in moulding the jaw is to detach the lip and cheek with the wing of the nose and floor of the nostril, from the underlying bone. It is proper to do this even if repair of the lip is not contemplated at the same time, as in healing, the denuded lip aids greatly in prompt and complete union of the ends of the alveolus.

This mobilization of the soft parts is done through a small incision made quite close to the alveolus as high up in the sulcus as possible so as to leave the mucosa on the posterior surface of the lip undamaged. The soft structures are then pushed away from the bone by a piece of gauze on forceps and bleeding is controlled by pressure. This mobilization of the lips and cheek and wing of the nose is all important, as the final, nice approximation, without the use of tension sutures, depends upon its thoroughness. With the outer surface of the maxilla thus exposed, the bodies of the bones are pushed together by a force exerted through the thumbs on each side of the jaw. Considerable and prolonged effort is sometimes necessary, but it should be continued steadily until the tendency of the alveolus to spring back is overcome. The force must be exerted above the alveolus, otherwise the border may simply be bent inward, leading to bad direction of the teeth later on. As the long arm of the alveolus is forced inward, the pressure is carried forward toward its anterior end and the edges of the cleft are approximated. These ends are then denuded down to the young bone on each side. If they are freshened before the reposition is complete, it may be found that the raw areas do not approximate. In cases where it is impossible to force the alveolar edges together by simple digital pressure, a transverse incision is made with a chisel through the body of the jaw, above the tooth sockets or a vertical incision through the alveolus at the appropriate point for producing a green stick fracture, so as to bring the long arm of the alveolus back into line, thus completing the alveolar curve.

This vertical division of the alveolus is always to be avoided if possible. The bones are then secured in the same manner as stated above but the suture must be carried back farther so as to overlap the point of fracture. In addition it passes from side to side through the nasal fossa above the horizontal palate plates and is tied in front. Wire is used when the edges show a tendency to spring apart after the moulding process is complete and kangaroo tendon when this tendency has been completely overcome. The kangaroo tendon has the obvious advantage that it does not have to be removed, a difficult task sometimes with wire. When the alveolus is the site of a bilateral cleft, the reposition of the premaxillary

Fig. 2A

Fig. 2B

Fig. 2A.—J. S., three months old. Unilateral cleft of lip and palate; spreading of nasal ring, buckling of cartilage and deviation of septum.

Fig. 2B.—J. S., eighteen months old. Nasal deformity almost completely corrected by moulding and fixing alveolar arch; nostrils shapely; lip of proper length and thickness and vermilion border continuous.

Fig. 3A

Fig. 3B

Fig. 3A.—F. H., three months old. Unilateral cleft of lip and palate; long axis of aperture oblique; there is a lateral deviation of the entire nose.

Fig. 3B.—F. H., twelve months old. The lip has been repaired and the nostril corrected. On account of the incomplete reduction of the long arm of the arch the lateral deviation of the nose persists somewhat.

Fig. 5A

Fig. 5B

FIG. 5A.—G. C., four months old. Unilateral cleft of lip and palate; deviation of nose and obliquity of nasal aperture.

FIG. 5B.—G. C., thirteen months old. Nostrils corrected and lip repaired.

bone presents added difficulties, but its complete reduction is of the greatest importance. Under no circumstances should it ever be removed. Its loss causes an irreparable deformity, which only increases with the development of the face (Fig. 6 a and b).

In addition to moulding the jaws to narrow the cleft, the anterosuperior rotation of the premaxilla must be overcome. This is most satisfactorily done by submucous and periosteal section of the pedicle of the premaxilla according to the method of Veau (8). After the pedicle is divided, the premaxilla can be pushed back, in the words of Veau, "as a drawer is pushed in, and not swung on a hinge as a door is turned," as must be done after the removal of sections or division of the vomer and nasal cartilage. By division and reposition of the bone in the manner described, the teeth will later assume a vertical position and not be turned backward, and the cleft can be closed without sacrificing the prominence of the nose. The premaxilla is fixed in position by a suture of silver wire and the soft structures closed immediately if possible, since relaxation has been secured as the first step and the undermining of the soft tissues a second time with the resultant fibrous tissue increase is to be avoided. Closure will help to hold the premaxilla and alveolus in line and add to its blood supply, thus enhancing the probability of solid union of the premaxilla with the lateral arms of the alveolar arch. Both sides of the lip may then be repaired or one side only, leaving the other to a later date. This division of the lip closure into two stages makes it easier to avoid tension on the suture line and prevents flattening of the lip.

Fig. 6A

Fig. 6B

FIG. 6A.—C. E., fourteen years old. Unilateral cleft of lip and palate operated upon at three months; premaxillary bone removed; deformity marked and impossible to correct.

FIG. 6B.—C. E. Profile showing approximation of tip of nose and lower lip in patients in whom the premaxilla has been removed.

CORRECTION OF THE NASAL DEFORMITY

The method of closing the lip has as much bearing upon the final correction of the nasal deformity as does the reestablishment of the bony foundation, and it depends upon three factors—1, complete mobilization; 2, conservation of the mucosa, and 3, reconstruction of the orbicularis muscle. In simple clefts and in all others where the defect in the alveolar border can be corrected, it is usually easy to close the lip completely after thorough mobilization of the soft parts, as has been described. In those cases where it is impossible to close the alveolar cleft owing to the age of the patient or the loss of the premaxilla, it may be necessary to make further relaxation incisions transversely under the nose and around the ala. In the operation of Giraldes (9) a flap from the internal border of the cleft lip is turned up to complete the nasal ring and the flap on the external border is used to complete the lip. Berger (10) recommended the separation of the nose from the lip with a lateral relaxation incision into the cheek, and Saurter (11) mobilized the point of the nose by an oblique incision through the cartilaginous septum with liberation of the wing of the nose which was then sutured to the septum at the highest point on the internal border of the cleft. Kuster (12), after mobilizing the nostril by an incision which turns around it, described a small flap from the innermost part of the wing of the nose and sutured it to a denuded area on the highest part of the opposite border. Le Dentu (13) recommended the following procedure as the most perfect for restoration of the

Fig. 8A

Fig. 8B

FIG. 8A.—H. C., twelve years old. Operated upon elsewhere at three months. Unilateral cleft of lip and palate; wing of nose flat and nostril almost occluded by ridge in the nasal floor; vermilion line broken by a strip of mucosa which extends into the skin.

FIG. 8B.—H. C., two weeks after operation. Lip opened completely and formal operation done. Nasal aperture widened and raised and the defect in the lip corrected.

Fig. 9A

Fig. 9B

FIG. 9A.—E. B., eighteen months old. Incomplete bilateral cleft of the lip; cleft of the soft palate; absence of the orbicular muscle for the full extent of both lip clefts. The nostrils were complete and very well formed.

FIG. 9B.—E. B., eighteen months. Showing the patient eight days after operation. The dark line on the lip was due to Whitehead varnish.

nostril. After mobilization is complete, the posterior and inferior part of the septum at the inner end of the nasal ring is denuded with a sharp knife. A small flap is cut on the uppermost part of the external border of the cleft, and if need be, this can be carried around the wing of the nose to further liberate it. As a rule, however, this is not necessary. The small flap is then turned up and sutured in place against the denuded area on the inner end of the nasal septum.

It is important to avoid excising any portion of the nasal ring at the margins of the cleft, as the cartilage is nearly always shorter than it appears to be and furthermore when its outer end is fitted into the normal position at the base of the columella, close against the premaxilla, the orifice will rarely be found to be too large. Division or resection of wedges of the septum should be avoided if possible.

Conservation of the mucosa of the margins of the cleft is urgently recommended by Lane (2) as an aid in the correction of the nasal deformity. An incision is made through the anterior surface of the margins of the cleft along the junction of the skin and mucosa where it lines the sides of the defect, so as to form a distinct posterior flap. The incisions made in the lip should be as nearly straight as possible and should be carried backward through the full thickness of the lip away from the cleft so as not to remove only a thin strip of the vermilion lining from the anterior edge. When this happens, the sutured lip presents a ridge on each side of the scar which is most unsightly. When this incision has been carried down to the mucosa on the posterior surface of the lip, dividing all muscle fibres, the flaps are turned backward and when the lip is sutured, are turned into the mouth. In this manner any adhesion between the lip and alveolus is avoided assuring mobility and thickness and an appearance of pouting which is so much more desirable than the flatness which only accentuates the prominence of the lower lip. The added thickness due to the conserved mucosa also assures a fullness beneath the nostril which aids in holding the outer end of the nasal ring in position.

In bilateral clefts, the mucosa from the inferior border of the tubercle is turned down to form a deep layer for the lateral arms of the cleft when they are sutured in the median line, and if the lateral incisions are made so as to convert the skin of the tubercle into a triangular, rather than a quadrilateral area, there is less danger of protrusion of the tubercle and flattening of the free edges of the lip after suture (Fig. 7). Veau (4) also has recently insisted upon the preservation of the mucosa as being of the utmost importance in attaining the finest cosmetic results.

When the flaps have been cut and the ends of the nasal ring freshened, after careful observation and measurement of the circumference of the normal nostril, the repair is commenced by uniting the edges of the mucosa on the floor of the nostril inside the anterior aperture so as to narrow it sufficiently, by interrupted sutures of fine horsehair placed so as to evert the margins. The external end of the nasal ring is then carried up and in and secured to the slight hump on the lower innermost point of the nasal septum, thus completing the cartilaginous ring and reforming the slight ridge between the nostril and the upper border of the lip. This is secured from beneath the lip by a suture of fine chromic catgut. A tension suture of waxed silk is passed on a straight intestinal needle from the crease on the outside of the wing of the nose on the cleft side, into the lip below the nasal floor. This grasps the upper fibres of the orbicularis oris and passes across the cleft into its other side traversing the lip at right angles to the cleft beneath the other nostril. It makes its exit at a point in the crease of the sound side exactly opposite its point of entrance. A second suture of the same material is passed one eighth of an inch lower down and parallel to it. The ends on each side are tied over a small piece of rubber tubing, making just enough tension to relieve the strain on the upper part of the lip during crying and to slightly approximate the wings of the nose without narrowing the nasal apertures. This suture approximates the uppermost fibres of the orbicularis muscle and elevates the lip and nostril. The lip is closed with two or three interrupted sutures of waxed black silk passed as on end mattress stitches from the mucosal side, firmly grasping the muscle and not perforating the skin which is closed with a subcuticular suture of waxed silk. This enters at the side of the nose, being tied to the end of the tension suture above and to one of the interrupted sutures which are usually placed in the free vermilion border of the lip. The skin margins are not traumatized in the slightest degree either by needle puncture or the bite of forceps. The conservation of the mucosa gives a fullness to the repaired lip which is always lacking when this tissue is excised. Immediately after operation there is usually an appearance of pouting which disappears in a short time. The perfect alignment of the mucocutaneous junction at the united edges of the cleft is of great importance in the final result. This point must be accurately approximated and held without tension on the skin, so that there will be no scar to break the continuity of the vermilion border (Fig. 8 a and b). Occasionally when the flaps, as cut by Thompson's (7) method, are straightened out, the acuity of the angle makes the farthest points come together with difficulty and if a fine suture is placed in the skin at this point in the hope of close approximation, it almost invariably is tied too tightly and cuts out, leaving a transverse scar in the very place where it is most to be deplored. I have avoided this by marking the points on the mucocutaneous junction with a sharp pointed caliper and then carrying the incision through the mucocutaneous line into the vermilion of the border on one side before turning the knife to cut an angle toward the free border. In this way the two angles are not exactly opposite each other and the tension on the skin of the muco-

Fig. 7.—D. B., five years old. Operated upon elsewhere at three months; marked protrusion of tubercle with a flat lip below it; nose flat and nostrils horizontal; palate completely open; to be operated upon later.

cutaneous line is avoided. This results in nice approximation by means of the subcuticular suture mentioned above and a splendid looking lip. Whitehead varnish is applied within and without to advantage. Incomplete clefts should always be made complete and the formal operation done, in order to thoroughly unite the thin muscle beneath the nostril. However, in those incomplete cases in which the nasal ring is complete and the nostril shapely, it should not be incroached upon (Fig. 9 a and b). Occasionally in older, neglected patients it will be necessary to completely mobilize the entire nose by division of the bony attachments and subsequent manipulation with fixation in the correct position, Blair (15). This is only needed in wide clefts which are complete and a nasal deformity in which plastic procedures on the soft parts are obviously insufficient.

POSTOPERATIVE CARE

The child is kept quiet after reaction by satisfying its hunger and thirst promptly. If possible, the mother is allowed to stay with the infant in the hospital and the breast milk is pumped and fed with a sterile spoon or dropper at regular intervals. In older children, sterile food and water are given according to their custom. If necessary, paregoric and occasionally morphine is given, although it must be remembered that fatalities have ensued from the overadministration of morphine to small children. Examination is avoided as much as possible until three or four days have passed. Then the posterior surface of the lip and the mouth are washed out with sterile water by gentle force from a syringe to remove any food particles which may adhere to the sutures. It does no good to be constantly inspecting the lip, serving only to irritate the child and perhaps increase the danger of infection.

CONCLUSIONS

1.-The correction of the nasal deformity depends on correction of bony framework first.

2. This should be done as soon as is consistent with safety so as to be able to hold the bone without cutting or fracturing it.

3. The premaxilla should always be conserved and replaced by dividing its pedicle rather than excising the vomer or cartilaginous septum.

4. Free mobilization of the cheek, wing and floor of the nose is of prime importance.

5. Conservation of the mucosa on the edges of the cleft is imperative.

6. The floor of the nostril should be narrowed and the axis of the nostril corrected by fixing the outer end of the nasal cartilage up and in against the premaxilla.

7. Avoidance of opposing the angles of the incision at the mucocutaneous border will aid in assuring a smooth continuous vermilion border.

8. Exercise by grimacing and massage of the lip after operation aids in rendering it soft and supple.

The author's references will appear in his reprints.

The Surgical Treatment of Echinococcosis*

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As regards the title of my paper, it might be suggested that the word "surgical" was superfluous, in that there is no treatment of hydatid cysts other than surgical. This, however, would be unwarranted, for when we come to the treatment of hydatid cysts of the lungs, we shall see that there is a large class of the latter in which Dévé has shown that expectant treatment is the correct one, seeing that eighty per cent. of cases so treated result in spontaneous cure by vomica: I refer to the small, deep, parabronchial cysts.[1] And this fact is most important in that any attempt to deal surgically with cysts in this position would be, for obvious reasons, extremely dangerous and difficult. With this solitary exception it is true that (leaving out echinococcosis bavarotyrolienne, which is usually not amenable to any form of treatment) the proper treatment of hydatid cysts is surgical.

One may note in passing that the disease in question is so uncommon in North America that no one individual can have had in this country any clinical experience comparable to that enjoyed by surgeons in some parts of Australia and South America, where many men can count their cases by the hundred, and some by the thousand (Varsi of Rosario, eleven hundred personal operations). Ferguson, however, stated that he had seen at least a hundred cases in Winnipeg between 1882 and 1894 amongst the Icelandic immigrants.

With these preliminary remarks, I will take up seriatim the surgical treatment of hydatid cysts as they occur in the various organs of the body.

LIVER

Seventy-five per cent. of hydatid cysts occur in the liver. I have collected from literature, or through private communications, 170 cases for North America since 1902. The treatment in this situation is always surgical. We will briefly consider the three methods available.

Total extirpation.—As the adventitious capsule itself consists of liver tissue, this practically means resection of that part of the liver containing the cyst. This technic is possible only under very exceptional circumstances, i.e., a more or less pedunculated cyst situated on the anterior hepatic border (Ferrari and Vergos, 1923). One may occasionally

*A paper read in abstract before the Surgical Section of the California State Medical Association at Yosemite, May 19, 1925.

[1]The following authorities concur with Dévé in this opinion: Magnusson; Lugones; Lamas; Pelissier; Verdelet; Zerbino; Pelfort; Bourrat and Cordier; Finochietto; Morquio; Escudero (1922); Lozano; Portu-Pereyra; Peritchitch; Corlette (privately communicated to Dévé); and Barnett. The latest account, and it is a very graphic one, of a spontaneous cure by vomica (in a child age 13) is that by J. Garcia del Diestro (1924).

It is only fair to state that there are a few dissenters: Lenormant; Latteri; Baumgartner and Bardon; Blasco and Gomez; Sergent; Ivanissevich and Arce; and especially Blanc-Fortacin of Madrid, whose article on the subject, in 1922, caused Dévé to return to the charge. In a recent article (February, 1925) Domingo Prat appears as a mild dissenter.

be able to shell out or enucleate a nonparasitic cyst of the liver, but not an hydatid cyst. (*vide* Garré, three cases, cited by Moynihan; *vide* also Buckley.)

The closed method.—The technic here consists of the formolage of Dévé, incision and removal of contents of the cyst, including, of course, the membranes, thorough drying of the cavity left, excision of any redundant cyst wall which may obtain, and tight closure without drainage. In addition, the suture line should be attached to the abdominal wall: this is the "operation of Posadas," known in France as Delbet's operation, in Australia sometimes as Bond's operation, and as a matter of fact, first performed by Knowsley Thornton of England in 1883. Its scope, in the case of clean cysts, has of late years been much extended; it is, in fact, now regarded as the operation of choice, as a perusal of the recent Australian, French, and South American literature will show. Thus, K. D. Fairley of Australia comes out strongly in favor of the closed method in the absence of Barnett's contraindications, which are as follows: rigidity of cyst walls, suppuration, biliary effusion into cyst, rupture of cyst into the surrounding viscera, hemorrhage of cyst wall, and multivesiculation. Vegas and Cranwell give the closure mortality as 2.1 per cent. as against the marsupialization mortality of 4.4 per cent. (D. Prat). Arrizabalaga, 1923, says: "Thornton and Bond invented it; Australian surgeons rapidly abandoned it for simple stabbing; Posadas established it; and Delbet popularized it in Europe."

Cúneo of Entre-Rios, and in fact the majority of South American surgeons favor it, though Deniker wrote, in 1923: "Closure has captured Europe, Argentina is more conservative." In France, Baraduc, Quénu, Routier, Rocher and Masse, and many others have written strongly in its favor. Indeed, there are surgeons (Bond, Kilvington, Russell, Quénu, Brun and Lauriol, 15 cases, 1923; Dupont and Bazy), who go much further, and just as it is more or less fashionable nowadays to omit abdominal drainage in many pus cases, so these enthusiasts apply the closed method to frankly suppurating hydatid cysts. In borderline cases, as in abdominal surgery generally, it is often a very nice point to decide when and when not to drain.

Stewart McKay of Australia drains in hydatid cysts of the liver only when suppuration exists. He is a very strong advocate of the Posadas method. He uses a Finochiettolike apparatus, which makes safe the closing of cysts containing daughter cysts. He emphasizes the necessity of sewing gauze to the skin edges when employing the closed technic.

Zwar of Australia also favors the Posadas method, filling the adventitious capsule with normal saline, a procedure adopted also by Hamilton Russell, but not considered necessary by Morton.

Craig is on the fence in this respect. He says: "Everybody uses the Posadas method, with or without saline."

Kilvington, 1924, disapproves of drainage of hydatid cysts, except those of the lung. He has modified Dévé's formolage to the extent of increasing the strength up to twenty per cent.; in one case he left forty-five c.c. of a ten per cent. solution in a large adventitious capsule with good results. McKay draws the line at ten per cent., and quotes a case in which death was attributed to the leaving of ten per cent. formalin in an hydatid cyst cavity of the thigh.

Incidentally, the closed method of treating suppurating liver cysts of other than hydatid origin has been recently advocated (H. Constantini, Robineau, Delbet and Leveuf).

Meanwhile, the advocates of closure for suppurating hydatid cysts are limited, at present, to a few adventurous spirits. The majority of men of large experience in this particular field are more conservative: Vegas, himself, told me he was among the latter.

With the Posadas operation, if effusion, biliary or otherwise, causes trouble subsequently, it is always a simple matter to tap, and if necessary marsupialize. Meanwhile, the patient has had a chance of a very rapid cure.

Marsupialization and drainage.—This is the accepted treatment for frankly suppurating hydatid cysts, as also for large complicated cysts. It will be remembered that it is sometimes necessary in the case of multiple cysts to attack some of them from the interior of the main cyst. Here, for mechanical reasons, it will be very difficult to make sure that no hydatid débris remains, and consequently marsupialization is the wiser course. The disadvantages of this technic are the slower convalesence of the patient, prolonged suppuration, and the danger of postoperative hernia.

Before concluding my remarks on hydatid cysts of the liver, it is well to mention Finochietto's trocar-aspirator, the use of which, even in Buenos Aires, is still regarded as *sub judice*. The instrument consists of a large trocar (eighteen mm. in diameter) connecting with which is a pumping apparatus. It is designed to rapidly and thoroughly clear out the contents of hydatid cysts, membranes included. The "if" about it is the possibility of leaking fluid around the point of the trocar at the moment that it is plunged into the tense cyst, and this, as a matter of fact, occurred on two occasions on which I saw it used in Buenos Aires. The Argentinian surgeons very carefully wall off the field of operation in these cases, nevertheless the escape of fluid as above mentioned carries with it the possibility of secondary echinococcosis.

The preceding remarks apply only to echinococcosis hydatidosis. For mechanical reasons, usually no treatment, surgical or otherwise, is possible (except theoretically early bloc resection) for the rarer type of echinococcosis bavarotyrolienne. A few such successful excisions have, however, been reported (Bruns, cited by Brumpt: Läwen).

THE LUNG

Incidence ten per cent., second commonest site for hydatid cysts. Eighteen American cases have been reported since Lyon's review. Hydatid cysts of the lung may be divided into: 1. Large cortical cysts; 2. Small central ones. The latter type is not suitable for surgical treatment, as has been pointed out before, and need not here further detain us.

As regards the large superficial cysts, which are far removed from large bloodvessels and from large bronchi, it is almost universally admitted that they should be operated upon as soon as diagnosed.

Cordier, however, is an exception, believing as he does that the question does not depend on the size or site of the cyst, but on the presence or absence of tolerance of the cyst by the surrounding pulmonary parenchyma. However, few instructed persons would permit operation on their own persons for a small central cyst, even if the latter did cause some symptoms, seeing that the chances are four to one that they would recover without it.

The question resolves itself, then, into that of a one stage or a two stage operation, with the consensus of opinion, on the principle of safety first, favoring the latter. The Lamas-Prat-Mondino technic, or some modification thereof, is at the present date the most generally approved one, and I shall here briefly describe it. Costal resection under local anesthesia. Tampon of iodized gauze. Ten days later incision and drainage without anesthesia. The membranes are usually expelled a few days later. Exact x ray localization is essential before each stage of the operation, and the Jockey position is used.

D. Prat, of Montevideo, slightly modifies this procedure. If there are no adhesions (lung can be seen to slip during respiration), he incises the pleura and packs with gauze for twelve days. He remarks that with this technic the lung can be palpated with the finger, and that the entry of a little air does not matter. He removes the membranes, and insists on drainage in all pulmonary cysts, which in his own practice healed in from three to eight weeks without fistulæ. Of fourteen cases without adhesions thus treated, all the patients were cured. In eleven cases in which adhesions were present, there were two deaths. The needle is used as a guide for the knife, the knife for the artery forceps, and the latter must not be removed before the drain is in. He thinks that only six to ten per cent. of cases are cured by spontaneous vomica.

Petit de la Villeon likewise advocates the Lamas operation as being the safest. He provokes adhesions, and ten days later removes the cyst, and drains for a week. He disapproves of Prat's incision, as involving the danger of pneumothorax, and advises investigation in the next intercostal space if, after resection of a rib, the pericostal bed is too thick to permit one to see if the pleura is adherent or no. He characterizes the deliberate production of wide free surgical pneumothorax as a "brilliant but dangerous procedure," and pneumotomy after collarette suture as merely a step towards the later and safer Lamas-Prat-Mondino technic.

Bouzom also advocates the Lamas-Prat-Mondino technic, and reports a case.

It must be admitted, however, that there are many advocates of the one stage operation: thus, Finochietto makes light of pneumothorax, which he says tends to check hemorrhage. He speaks with favor of the extrapleural pneumothorax of Triftia (1895), as also do Baumgartner and Bardon for open cyst (Dévé's comment is: "Is it necessary?"), and uses his trocar-aspirator.

Albertin and Barjon, Guimbellot (229 collected operative cases, marsupialized or closed, with 194 cures), Roux, Quénu, Lavillat, and Acevedo are also one stage men.

Cordier, 1920 (Case III), reported a case of hydatid cysts of the lung which he evacuated and closed. The patient was discharged cured in a month. He warns us to "respect clean vomicæ," and remarks that "it is not the cyst which matters, but the degree of tolerance."

Escudero warns us against operating upon small well tolerated cysts found by chance. He dissents from the theory that vomica is the natural evolution of an hydatid cyst of the lung in man. He quotes Vegas and Cranwell to the effect that in man the parasite has entered, unfortunately for itself, a blind alley. The process should be studied in a natural secondary host, e.g., the pig or the sheep, and not in man. In such animals the normal cycle is not facilitated by the rupture of the vesicle. He regards cure by vomica as a comparatively rare occurrence, and advises operation for badly tolerated cysts, or for hydatid caverns which drain badly. He considers expectancy justifiable, however, in the case of small central cysts, as operation here is difficult and dangerous. As regards technic, he labors the point that both the closed and open methods have their proper fields. He advocates a one stage operation, the Finochietto modification of the Posadas method, for clean uncomplicated cysts, when no bronchial opening is seen. For complicated cysts, or those showing evidence of pericystic infection or open bronchi, he prefers marsupialization, and regards the scope of this procedure as greater than that of the Posadas operation. He insists, however, on the danger of hydatid tuberculosis.

Bourrat says: "If central wait; if peripheral operate. If badly tolerated, operate in the presence of fever and infection. If cyst open and peripheral, operate if suppuration obtains. If central, one may still have to operate, but remember the danger and difficulties!"

Nothwithstanding the differences of opinions above referred to, I think that it is safe to say that the general opinion today is that the Lamas-Prat-Mondino technic for hydatid cysts of the lung, equally with the Posadas operation for hydatid cysts of the liver, hold the field.

There is no difference of opinion at all that, in the case of hydatid cysts of the lung, both formolage and the use of a general anesthetic should be barred. It seems improbable that the preference of a few enthusiasts for the closed method here, as well as in the case of the liver, where its propriety is largely accepted, will spread, in view of the fact that open bronchi, and consequently danger of infection, usually obtains (Finochietto, Stewart McKay, Kilvington).

THE KIDNEY

Incidence 3.30 per cent. (Spurr, 1,302 cases in Buenos Aires hospitals, 1902-1920). Twenty-three American cases have been reported to date.

Here we have generally to choose between partial resection and nephrectomy, bearing in mind that the latter operation is a much less dangerous one in the case of an organ which is almost completely destroyed than when compensatory hypertrophy of the other kidney has not had time to materialize (*vide* case report of Bravo, Spain, 1907). Except when implantation is markedly polar, or the cyst pedunculated (juxtarenal), total removal of the organ will generally be advisable. The dangers of local recurrence and the certainty of dense adhesions resulting

after marsupialization militate against the latter technic, though this procedure may have to be resorted to, as a temporary expedient at any rate, in cases of complicated cysts where the general condition of the patient is poor.

Abadie, 1924, reported two successful cases treated by formolage, partial resection, and closure without drainage.

Aguirre, 1921, reports the case of a girl, aged nine, with a cyst the size of an adult's head, only the inferior pole of the kidney was left. Nephrectomy was successfully performed.

This remark seems sweeping, but a recently reported case by Chevassu (March 7, 1925), lends color to it. A young man, suffering from advanced pulmonary tuberculosis, including pneumothorax, was referred to Chevassu for operation for a large tumor in the right loin of rapid development. He at first declined, but on finding that the functional capacity was good, finally consented to operate, under local anesthesia. Iliolumbar approach, formolage, incision of cyst, and removal of endocyst, which was rich in scolices. Resection of the thin adventitious capsule down to a small collarette, which was then sutured with catgut. Closure of abdominal wall with aluminum bronze wire, with small drain for a few days down to kidney. Excellent recovery. There were no daughter cysts, and the inferior pole of the kidney was intact, the cyst being implanted on the anteroexternal aspect of the kidney.

Soupault, however, in the case of a patient suffering from a suppurating cyst of the left kidney, performed a nephrectomy, while admitting that a considerable amount of healthy kidney remained. He vigorously defends his action.

De Sanctis, 1924, reported a case in which a correct preoperative diagnosis was made by the method of Spurr. The cyst was suppurating and full of daughter cysts. He marsupialized in the first place, but had to do a nephrectomy two months later.

Albarran collected seven cases of transperitoneal nephrectomies, in which five patients died, and three personal cases of lumbar nephrectomies, in all of which the patients recovered.

Houzel's fourteen patients were all treated by nephrectomy and all recovered.

THE BRAIN

Incidence, according to Dévé, 0.6 per cent. in adults, and 4.3 per cent in children. Thus, hydatid cysts of the brain are seven times more frequent in children than in adults. In children they follow the liver and the lungs in point of frequency, whereas in adults more hydatid cysts obtain in the muscles and connective tissue, kidney, spleen, bone, and orbit, than in the brain.

In the recent statistics of Lombard, collected from Vegas and Cranwell, Garcia, Pena, and Thomas, the general incidence is given as three per cent. Five American cases have been reported to date (Granger, Case 7, Lyon; Hyndman, Case 62, Lyon; Mudd, Case 95, Lyon; Miner, Case 224, Lyon; Davis and Balboni, Case 24).

The following is a typical case report: Dimitri and Taubenschlag of Argentina, girl aged twelve. Operation in two stages at intervals of two days. Suture without drainage. Discharged with all symptoms relieved in fifteen days. Well for three years, then readmitted with a clinical picture necessitating further operation. Same technic, main cyst extracted entire, then fifty smaller ones. Gauze drainage. Discharge clear at first, then purulent. Death from meningoencephalitis.

In discussing the surgical treatment here, it is mainly to South America we must look for light. And, as a matter of fact, the immediate surgical results, *quâ* life, have been remarkably good, nearly fifty per cent. of the cases reported in late years having survived operation. The late results, however, are quite a different matter, and are acknowledged to be poor. Dr. Pena showed me, in 1922, a little girl, aged nine, who was quite well eight months after the removal of an hydatid cyst from her brain.

Beauduim advises wide decompression and ablation of cyst, with or without drainage. The mortality in his personal statistics based on thirty-nine cases was seventy-two per cent., of Babonneix, mortality seventy-eight per cent. in eighteen cases, and Vegas seventy-four per cent. in fifteen hydatid cysts of the brain occurring in 952 cases.

Bird of Australia packs the cavity with gauze.

Primary hydatid cysts of the brain are always solitary, metastatic cysts usually multiple (Dévé and Dumont, thirteen cases), the latter inoperable.

The most valuable recent contribution to this subject is that of P. Lombard, of Algiers. He reports one personally successful case, the first operated on in France according to the technic which he now advocates. The patient was an adult male Arab, from whom he removed, at two sittings, an hydatid cyst the size of a large orange from the depth of the left hemisphere. The man recovered, but complete blindness remained. He advises operation in two stages: 1, large decompression, trap door replaced; do not puncture; 2, a few days later, under local anesthesia, tap with a fine needle, and slowly empty pocket; extract membrane en masse, suture exactly, and tap to evacuate air. He states that up to then, 1920, only three cases of two stage operation for cerebral tumor had been published (Foster Kennedy, Ryan, and his personal case), and all recovered. He quotes fifty-three operative cases, in which the immediate mortality was twenty-nine. Death with coma and hyperpyrexia occurred eleven times following rapid decompression, and removal of a large cyst at one sitting. He notes the danger of fatal subsequent pneumocyst; in his own case he had to tap and let out air under pressure. He emphasizes the fact that it is always necessary to extract completely all membranes, and points out that in many of the case reports "cure" should read "progressive improvement," which resulted in thirty-four per cent. of cases in his statistics.

Cases of hydatid cysts of the brain have been reported also by Angland, and Bertrand and Medacovitch of France; by Aievoli, and Sabatini of Italy; by Cardenal and Castella of Spain; by Foresti and Bonaba, de Leon, and Morquio of Uruguay; by Peters of Holland; by Bird, Verco and Poulton, and Ryan of Australia; by Reggiardo, Finochietto, and Rivarola of Argentina; by Ashby, LaPage, Caiger, and Sargent of England; by Fleming and Bury of India.

(*To be concluded*)

Instruments, Apparatus, and Clinical Notes

THE OSCILLOGRAM

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When a pneumatic cuff connected with a metallic manometer is fixed around a segment of a limb, and when the pressure in this cuff is progressively increased by insufflation of air, one notices that the index needle begins to oscillate, progressively increasing at first, and progressively decreasing between two extreme points, which correspond to the minimum and maximum values of the blood pressure. This fact forms the basis of the technic of the measurement of the blood pressure by the oscillatory method.

By graphically representing the length of oscillations for the various pressures, putting the latter as abscisses and the former as ordinates, a curve is obtained, the shape of which enables one to determine exactly the value of the maximum and the minimum pressures in making a diagnosis of several cardiovascular disorders, and in the case of hypertension frequently to determine the origin of the disorder, especially if one takes at the same time an oscillogram on a peripheral region.

Far too often in researches on blood pressure one forgets to examine the small arteries, the examination generally being concentrated on the large arteries in which elastic tissue predominates, although the variations of blood pressure are mostly due to the variations in calibre of the small arteries with their powerful muscular coats which are likely to contract of themselves. These arterioles react to the most varied influences, physical and chemical as well as nervous.

In order to register the length of oscillations to the various pressures it is necessary to have an apparatus producing oscillations long enough for their amplitude to be estimated with ease. But this condition is in itself a hindrance to the exact reading of pressures which for this reason is not easily noted, and it is necessary to use an apparatus which gives separately the pressures and the amplitude of the oscillations.

DESCRIPTION OF APPARATUS

The scheme given below shows the principle of this apparatus. The entire system (Fig. 1) is composed of a cuff C, which is to be put on the segment of limb where the blood pressure is to be taken; a pump, P, which inflates it; a manometer, M, used for measuring the pressures, and an oscillometer, O, which gives the amplitude of the oscillations to the various pressures. The oscillometer is composed of a strong box, completely closed, in which there is a manometric capsule connected with an index needle, the oscillations of which are visible through a glass lid. The capsule and the box in which it is enclosed are both branched on a tube, T, like all other parts of the apparatus, so that the capsule sustains an equal pressure on its outer and inner surface whatever the pressure may be. In this way the needle remains motionless. A tap, T, enables one to separate the manometric capsule from the box in which it is enclosed, and in this condition, the oscillations of the walls of the artery are transmitted only to the latter, which will reproduce them with the maximum of sensitiveness, the tension of this wall, no matter what the pressure may be, being always nothing until this tap is depressed.

The Pachon oscillometer (Fig. 2) and the plethysmo oscillometer of Spengler and Guillaume (Fig. 3) are the two French apparatuses the most likely to produce the oscillometric curve. If the first gives larger oscillations the latter has the advantage of being easily fitted to any sphygmomanometric apparatus.

The cuff must be long enough to go round the entire segment of limb. The width must be proportioned to the thickness of the limb to be examined; when the cuff is too narrow it gives too high figures for the maximum pressure. It may be stated as a general rule that the width of the cuff must always be equal to the diameter of the limb.

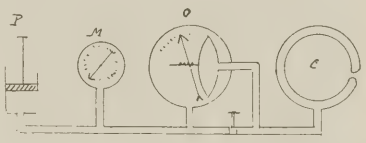

Fig. 1.—Schema of an oscillometer.

Contrary to the general practice by which the limb is lightly compressed at first till the circulation stops on the off side of the cuff, and is then decompressed, it is better to start with progressive compression, as experience has taught us that the sudden isolation of an important area from the general circulation does not happen without some inconvenience for certain patients, such as those suffering from angina pectoris or considerable hypertension.

The cuff having been placed in its appointed position, the pressure is increased, a centimentre of mercury at a time, and the length of the oscillation is noted down for each corresponding pressure. On a sheet of cross lined paper the lengths of oscillations are marked as ordinates and the pressures as abscisses, by joining together the points so marked one obtains an oscillogram. Working along these lines one notices that in a first stage the amplitude of the oscillations increase gradually, the curve being oblique and then suddenly becoming almost vertical.

This change of direction is caused by the production of the first big oscillation, the minimal. After having reached its summit, which corresponds to the largest oscillation, the height of which enables one to estimate the socalled oscillometric index, the curve begins to descend slowly, the oscillations which follow are less and less high as the pressure increases, and then there comes one oscillation, the amplitude of which is so very small in comparison with the preceding oscillation, that the curve drops suddenly.

At this moment, either by palpation or by auscul-

tation, neither pulsation nor any arterial sound may be heard lower than the cuff; the succeeding oscillations are scarcely different one from the other, and the last large oscillation is the maximal. Usually the minimal is seven to eight centimetres, and the maximal eleven to thirteen centimetres of mercury.

The curves in Figs. 4, 5, 6 and 7, were taken on the same patient at intervals of a few minutes, the

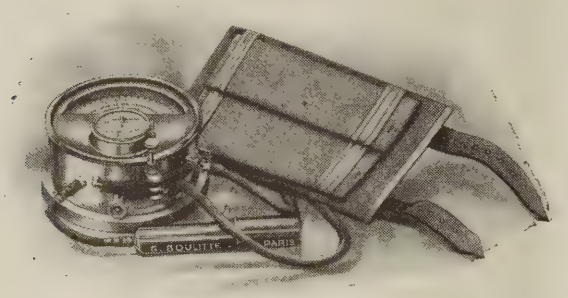

Fig. 2.—Pachon's oscillometer.

first one on the arm, the second on the thigh, the third on the forearm, and the fourth on the leg. Examination shows that the normal oscillogram has the general shape of a steeple with almost symmetrical lateral sides, the slope on the maximal side being slightly more oblique than on the minimal. With the same pressure, oscillations are higher (full line) on the right than on the left (dotted line), so that the curve taken on the right limb covers the curve of the left limb, which is especially the case for the upper limbs. It seems rational enough to ascribe this difference to the anatomical disposition of the arch of the aorta and of the large vessels which start from it as well as to the disposition of the iliac arteries at their origin, the left one reaching lower down than the right.

Comparing the curves of the upper and the lower limbs it will be noted that the height of the maximal oscillation is proportional to the calibre of the examined artery. The highest curve is given by the femoral artery, followed in decreasing order by the curve of the humeral, the curve of the tibials, and the curve of the arteries of the forearm.

The height of the oscillogram of women is, for the same pressure, generally lower than is the case with men. This is evidently due to the fact that adipose tissue is more abundant in women and that it partly deadens the expansion of the arteries. In case of illness, the oscillogram can be modified either in its general shape, or in the relations between the curves of the various limbs.

In hypertensions, these modifications are quite interesting to study, especially if at the same time an oscillogram is taken on a region where arteries have more muscular tissue. The curves will be taken before and after an injection of adrenalin, before and after a carefully watched inhalation of amyl nitrite, or more simply before and after plunging the limbs into a bath at 40° C. at least.

A few examples will give a better idea of the conditions. In the case of plethoric patients who are generally fat, great eaters, great drinkers, with every appearance of robust health, but who have an enlarged liver, an increased blood pressure and viscosity of the blood, the shape of the curve taken on the arm is not much modified. The same holds for the curves taken on the fingers or the legs. The inhalation of amyl nitrite and the injection of adrenalin modify the curve taken on the arm very little, but they respectively increase or decrease the height of the curve on a peripheral area. Capillaries obey the action of vasomotors in normal limits; on the whole, the oscillogram of plethoric patients has a normal shape, with the more or less high elevation of the blood pressure.

The oscillogram of atheromatous patients (Fig. 11) taken on the arm is characterized by a large base and a great height. It has the shape of a roof with a very steep anterior slope (minimal side) and a slightly inclined posterior slope which ends by a sudden drop. Taken on the legs over the ankle it is often reduced to a horizontal line, of very feeble height; neither hot bath nor adrenalin will modify it.

The oscillogram of arteriosclerotic patients (Fig. 10), when taken on the arm, has the shape of a steeple almost symmetrical on its anterior and posterior sides. The minimum tension is generally higher than with atheromatous patients, but the maximum tension is smaller. On the contrary, on peripheric arteries the oscillogram is higher of arteriosclerotic than of atheromatous patients and its shape is easily modified by the use of vasoconstrictors which determine a diminution of height which, however, is less than by the use of vasodilators.

The difference between these two varieties of hypertensive patients is understood when one remembers the characteristics of these two diseases, which so often are taken one for the other.

Atheromatous lesions are mostly to be found on the large and the middlesized arteries (elastic arteries), arteriosclerotic lesions mostly on capillaries (arteriocapillary fibrosis). Atheromatous

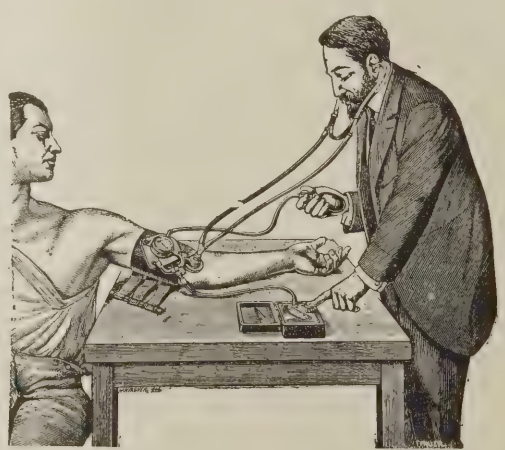

Fig. 3.—Oscillometer (Spencer and Guillaume.)

arteries are hard and infiltrated with cholesterin, the progression of the blood requiring a great effort of the heart, in accordance with the principle that circulation of an equal quantity of liquid at an equal speed in rigid tubes necessitates a stronger impulse than if the tube were elastic. The heart produces its effort by a compensating effort of the ventricle. Patients generally reach the normal term of human

life. In lesions of the abdominal aorta, and of the femoral and tibial arteries, the stricture of the latter is the cause of the lacking of height of the oscillogram taken on the foot. On the contrary, arteriosclerotic patients, whose lesions are mostly capillary, resent no obstacle between the heart and the periphery, so that the cardiac impulse is felt perfectly in the terminal arteries, the cause of a greater height of the oscillogram taken at this level. On the other hand, peripheral resistance is greater than in atheromatous people. Hence, a minimal pressure which is usually very high and only imperfectly counterbalanced by a heart always affected with myocarditis and which is very soon dilated. These patients therefore die young.

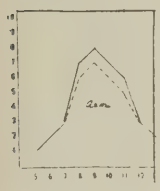

Fig. 4

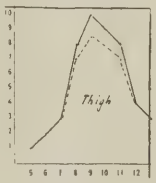

Fig. 5

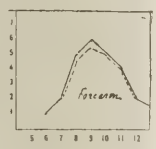

Fig. 6

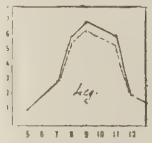

Fig. 7

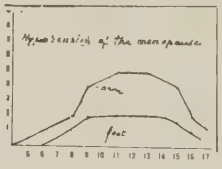

Fig. 8

Fig. 4.—Oscillogram of right and left leg. Fig. 5.—Oscillogram of thigh. Fig. 6.—Oscillogram of forearm. Fig. 7.—Oscillogram of leg. Fig. 8.—Oscillogram of hypertension of the menopause.

Quite by chance one often finds in persons still young high hypertensions which are not revealed by any apparent symptoms. These persons are usually very impressionable. These cases generally occur in businessmen, financiers, and Jews. When taken on a large artery of the arm the oscillogram is marked by a rapid rise of the portion corresponding to the small inframinimal oscillations, by the sudden appearance of a large oscillation, followed by several others still larger, which bring the curve to its maximum height and finally to a descent almost symmetrical with the ascent. The whole curve has the shape of a pointed steeple with very steep lateral sides (Fig. 13). When taken at the periphery the curve presents the general characteristics of the curve taken at the arm but the height of the maximum oscillation is very small. The difference between heights of the central and peripheral curves is even so great that it can lead one to think it is a case of atheroma. A hot bath, an inhalation of amyl nitrite, determine the following modifications: the curve taken at the arm becomes smaller, and the curve taken at the periphery increases in height. Maximum and minimum tensions decrease but return to their first values a few hours later. These hypertensions are the result of a peripheral vascular hypertonicity of an arterial spasm due to a hyperfunctioning of the sympathetic. Some of these patients show signs of hyperepinephritis; others do not. As I already mentioned, these patients stand their condition for a long time and with a minimum of inconvenience. It is much improved by stimulation of the vagus or sedation of the sympathetic.

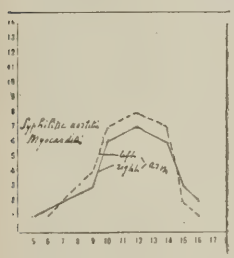

Fig. 9

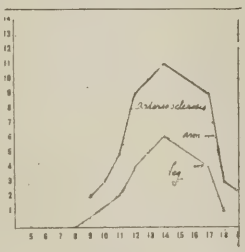

Fig. 10

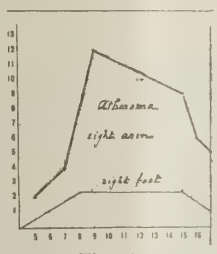

Fig. 11

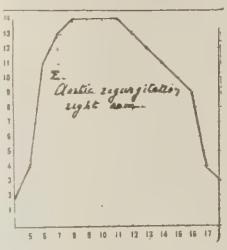

Fig. 12

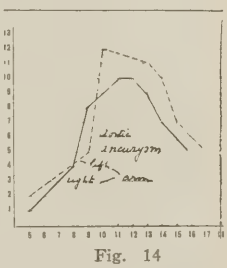

Fig. 14

Fig. 9.—Oscillogram in syphilitic aortitis. Fig. 10.—Oscillogram of arm and leg in arteriosclerosis. Fig. 11.—Oscillogram of arm and leg in atheroma. Fig. 12.—Oscillogram of right arm in aortic regurgitation. Fig. 14.—Oscillogram in aortic aneurysm.

All women suffer at the time of the menopause from a more or less lasting rise in the blood pressure; but in order to study this hypertension it is preferable to examine the women who have had a sudden surgical or radiotherapeutic menopause, for instance, as a result of the cure of a fibroma. The shape of the oscillometric curve at the arm, as well as at the lower limbs, is that of a low dome certainly corresponding to a spasm of the arteries (Fig. 8). The ovarian medication associated with thyroid helps these patients very much. These changes are especially noticeable on an oscillogram taken on peripheral regions.

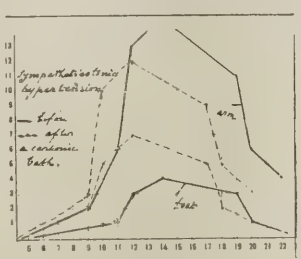

Fig. 13

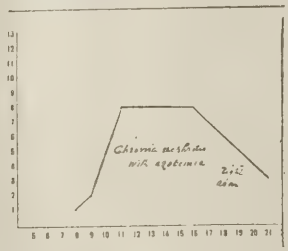

Fig. 15

Fig. 13.—Oscillogram of arm and leg in sympatheticotonic hypertension. Heavy line indicates the condition before a carbonic bath, and the broken line indicates the condition afterwards.

Fig. 15.—Oscillogram in chronic nephritis with azotemia.

Nephritis is always connected with hypertension till the heart begins to falter. The oscillometric curve of patients with retention of nitrogen has a certain resemblance to the curve of atheromatous patients, with the difference that it is lower; it has the shape of a fairly regular trapeze, of a curve of atheroma with the point cut off (Fig. 15). The dis-

appearance of the point of the oscillometric curve and its replacement by an almost horizontal line, the considerable gap between the maximum and minimum tensions are characteristic of nephrosclerosis.

Aortic regurgitation has the characteristic shape of a high dome (Fig. 12), which enables one to make a correct diagnosis at the beginning of the illness when the classical symptoms, including the murmur at the base, are not yet sufficiently strong to be perceived by the ear.

Up to now we have mentioned only curves taken in different but not symmetrical parts of the body. As I showed at the beginning of this article, the curves taken in symmetrical regions do not completely overlie each other, and the curve of the right arm, for instance, will be higher than the curve of the left. This is no longer the case in some pathological conditions where relations are reversed. I pointed out for the first time at the Medical Congress of Brussels in 1921 the inversion of the curves taken on the upper limbs in syphilitic aortitis although the figures of maximum and minimum pressures remained the same on both sides. The fact is so frequent and so particularly related to specific aortitis that one can assert without fail the syphilitic nature of the lesion when it is noticed (Fig. 8).

Aneurysm of the aorta is most easily discovered in this way; besides the fact that the values of the maximum are different on both sides the curve has such an abnormal shape that it is impossible not to think of an aortic ectasia when noticed (Fig. 14).

It is thus possible to help the diagnosis of an illness by the examination of the oscillometric diagram. I have only considered a few cases in this article but it is certain that many diseases have their own oscillometric régime. It is, however, sometimes difficult to discern in complex cases what belongs to each pathogenic element. A little practice will enable one to analyze an oscillogram in the same way one analyzes an electrocardiogram.

HOW TO DRY AND CLEAN HYPODERMIC NEEDLES

Walter M. Brunet, M.D.
Brooklyn, N. Y.

The care of hypodermic needles is, at best, a disagreeable task and oftentimes after a hypodermic or other injection, the needle is laid aside to be cleaned and dried later. Usually when the job of cleaning the needle is reached it is found to be clogged up. Oxidation is the foe of all steel needles

Fig. 1.—Apparatus used by author for drying and cleaning hypodermic needles.

and this destructive power is due to the fact that needles are put away without being properly dried.

The simple inexpensive instrument shown in Fig. 1 is for the purpose of drying and cleaning hypodermic needles.

It consists of a B-D asepto rubber bulb, half ounce capacity, into the neck of which is inserted a male Luer adapter. This adapter fits all Luer needles.

To use this instrument, the adapter is inserted into the hub of the needle and the bulb compressed several times. In this manner, the in and out action of the air through the needle will blow out the moisture and dry it thoroughly.

224 Seventy-eighth Street.

RECTAL IRRIGATIONS IN THE TREATMENT OF PROSTATITIS

Using the Ear Glass Return Flow Cannula

Ben-Henry Rose, M.D.
New York

Authorities agree that the administration of hot water through rectal irrigations is of decided therapeutic value for the relief and control of acute inflammations of the prostate, prostatic pain, and vesical tenesmus. Hot water may be allowed to flow into the rectum through a single tube attached to an enema bag (such as the Chetwood apparatus); then by disconnecting the tube from the bag, the water

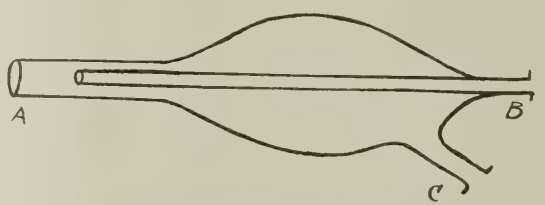

Fig. 1.—Ear glass return flow cannula. A, Tip which is inserted into the anal canal. B, Inflow tip which connects with the tube form the irrigating can. C, Outflow tip which connects with the tube leading into the pail.

is permitted to flow out again,—and so on. This method has the drawback in that it is time consuming.

The combined inflow and outflow rectal tubes may be used, the narrower bored tube being connected with the enema bag, while the wider outflow tube connects with the pail. These tubes are inserted into the anal canal, but the stretching of the anal sphincter muscles by these combined tubes is quite unpleasant and sometimes painful.

I have had occasion recently to prescribe rectal irrigations in a case of acute prostatitis where both the above mentioned methods were used and found to be unsatisfactory. It occurred to me that the ordinary ear glass return flow cannula, so commonly used for aural irrigations, might be used in this case. The upper limb of the proximal end was attached to the tube leading from the enema bag, while the lower limb (the outflow tip) was attached to a tube leading into the pail. The distal end, which measures over an inch in length, was lubricated and inserted into the anal canal. Thus a continuous flow was established, this method giving the maximum amount of comfort and benefit to the patient with the least amount of disturbance.

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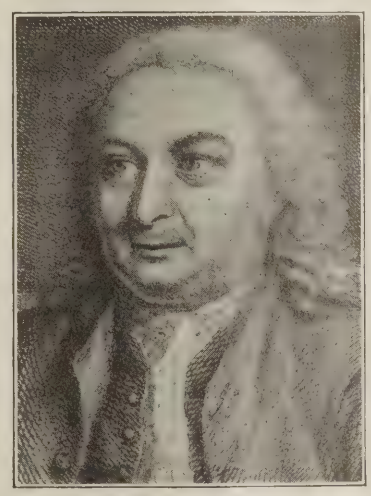
Historical Medicine

Haller and Some Bygone Observations in Pathology

SIR D'ARCY POWER, K.B.E., F.R.C.S., ENG.
London

Albert von Haller, the father of modern physiology, had encyclopedic knowledge. Born in 1708 and dying in 1777, he was a Swiss of the Swiss though many years of his active life were spent as a professor at the Hanoverian University of Göttingen. In early life he had the makings of a first class prig for at the age of four he used to preach to his father's servants; by the time he was nine he had compiled a Chaldee lexicon and at the age of fifteen he had written an epic poem of four thousand verses.

A healthy minded father and a severe tutor fortunately saved him and he grew up to be a level headed, kindly and learned man without any marked eccentricities. In 1757 he published a series of theses which had been read at various universities in Europe by candidates for the degree of Doctor of Medicine.



ALBERT VON HALLER

Many of them are useless, some are curious, as the attempt to explain the polyuria of diabetes by the help of geometry; others are valuable because they show that clinical acumen was as well developed two hundred years ago as it is at present. It is not necessary, therefore, to make any excuse for condensing a few of them for the modern reader. In every European university there was a common form for theses which was followed throughout the eighteenth century.

It began with an invocation to God or with a dedication to the master or professor under whom the candidate had worked. The subject was then stated formally and with such a parade of literary knowledge—Greek from choice, Hebrew occasionally—as would make the greatest impression. One or more cases were then given in detail, the observations having been made at first hand; conclusions were drawn and the whole matter was summed up in a formula capable of being categorically affirmed or denied. The thesis and indeed the whole business was in Latin, not classical of course, but still in Latin, so that it was "in a language not understanded of the people."

A CASE OF PERFORATED DUODENAL ULCER IN 1746

George Hamberger of Jena reported that he had been sent for to see a young woman who had died in a neighboring village on October 6, 1746. He was told that about eight o'clock in the morning she was gathering plums, and had lifted a basket filled with them upon her shoulders. In the evening on reaching home she was seized with violent abdominal pain; on the following day her belly was greatly swollen and she was feverish. She died the same evening but in the presence of some neighbors she had turned to her husband saying, "What have you done to me? Tell me the reason." The doctor was unable to find out from the neighbors whether there had been any other symptom, for instance, increasing fever or vomiting because, as he says very naively, either they were not interested in the illness of a servant or they held their peace lest there should be a magisterial inquiry. At any rate the matter had to be reported; first, because there was swelling of the abdomen far beyond what is usually seen after death; secondly, because of the suddenness of the death, and thirdly, on account of what the woman had said to her husband in the presence of witnesses.

A postmortem examination was ordered and "as soon as the peritoneum was excised flatus rushed violently out of the wound. It was odorless and it was followed by a yellow fluid mixed with small whitish specks. There were about two pounds of it in the abdominal and pelvic cavities. It was easy to see that this material was bilious and mixed with the products of digestion, as often as I raised and depressed the stomach and jejunum, which I did repeatedly, sometimes air and sometimes this stuff escaped. When the liver was slightly retracted I found a small round hole with a blackened edge. It was about the size of a pea and was six lines[1] away from the pylorus. When the duodenum was dissected further the perforation was found to be in the centre of an indurated ring. The centre of the ring formed a round or nearly hemispherical pit covered only with the common membrane (serous coat) without any trace of the other coats, either nervous or muscular, and in the centre of this pit was the perforation. The omentum and the colon near the stomach were inflamed. The stomach contained plum skins with some milk white masses for the patient had taken a great deal of milk and ripe plums. The liver was thickened locally and the uterus was as it ought to be in virgins."

Dr. Hamberger draws the conclusion from these observations that the perforation took place at the time the woman was lifting the heavy basket on to her shoulders. The actual mechanism of perforation being compression of the air which filled the intestines, but because the air was odorless he is in some doubt as to its source. It is interesting that no thought of an operation entered his mind.

[1] A line is 2.11 millimeters.

The Weed of Insanity

LOUIS J. BRAGMAN, M.D.
Syracuse, N. Y.

Hasheesh, the Arabic for herb, known variously as hashish, bhang, ganja, and charas, is a drug derived from the stalks and leaves of the plant cannabis indica. This plant is a variety of the common hemp, which, according to Cushny (1), possesses pharmacological interest only when cultivated in the warm climates such as Egypt, India, and the southern United States.

From the flowering top of the plant a resin and a volatile oil are obtained. The active principle of the drug is cannabinol, a phenolaldehyde with the formula $OH.C_{20}H_{28}COH$. Therapeutically it is an anodyne, a narcotic, and an antispasmodic in large doses. It is generally prescribed in the form of the extract, one sixth to one half grain, or the tincture, twenty minims. It has some value in the relief of migraine, whooping cough, asthma, paralysis agitans, and sleeplessness.

Cannabis indica has seen service as an intoxicant in Asia and Africa since times unknown, but it was not until the beginning of the nineteenth century that it was introduced into the Western Hemisphere for that purpose. According to estimation, about two hundred million people constantly indulge in it in some form or other, yet this figure is not so astounding as it might seem in view of the fact that the habitual use of small quantities has been shown not to be harmful to Easterners.

There are three methods commonly employed of taking the drug. It is smoked, alone or together with tobacco; it is prepared as an intoxicating drink; or it is mixed with sugar or honey and eaten as a confectionery, a popular medium of ingesting it.

Cannabism is the morbid state produced by the misuse of cannabis indica. The chief consequence is a derangement of the central nervous system, causing a combination of depression and stimulation or mental exaltation similar to that seen with morphine. Its action, however, is far less constant than that of the opiate, for it depends largely on the disposition and intellectual makeup of the consumer.

Soon after taking a large dose a dreamy, semiconscious state supervenes in which judgment is lost and the imagination runs amuck. Definite dreams follow, packed with the vividness of visions and filled with boundless extravagance. Ecstasy, merriment, uncontrollable laughter, selfsatisfaction, and extreme hyperactivity soon abound. Bizarre ideas appear, lacking in continuity. Measurement of time and space is destroyed, a striking feature. Consciousness is not obliterated but a feeling of unreality manifests itself. After the effects wear out a coherent and logical account of the adventures encountered can be related satisfactorily. Convulsive seizures or catalepsy sometimes form the climax of the spree. Continued abuse may finally lead to mania and dementia.

There is no insanity from overindulgence in hasheesh in this country (2) but it is comparatively frequent in Egypt and India. In one asylum alone in Cairo during the year of 1891 there were sixty-four cases of psychosis as the result of inhalation of the weed.

The physical symptoms of cannabism are indigestion, diarrhea, increased appetite, dilatation of the pupils, drooping eyelids, anemia, and general debility. The earliest mental symptom is a marked and increasing timidity. There is sometimes a *folie du doute* or even an agoraphobia. Delirium is usually present and is accompanied by a disturbance of the taste and muscle senses. There is also a complacent feeling of wellbeing together with the sensation of a dreamy, pleasurable existence.

Death from acute poisoning is rare; recovery has taken place after even extremely large doses.

II.

It was pointed out in a previous article (3) that Fitz Hugh Ludlow had undoubtedly transcribed a large fragment of his personal experiences when he wrote: What Shall They Do To Be Saved? (4) an injunction against the misuse of opium. It was likewise mentioned that he had written while still a student at Union College an article on hasheesh which immediately attained a widespread popularity throughout the country.

This article first appeared in *Putnam's Magazine* for September, 1856, as The Hasheesh Eater. It was shortly published by *Harper's* with the appended subtitle: Being Passages From the Life of a Pythagorean. Although absolute evidence is lacking, it does lead to the inference that a later article in *Putnam's* for December, 1856, called The Apocalypse of Hasheesh was incorporated in the book, which unfortunately is not obtainable. This assumption is made in view of the fact that the article deals largely with a theory concerning the relationship between Pythagoras and hasheesh.

It would seem likely then that the same writer who at thirty-three died a martyr to the opium habit, at a much earlier age came into close contact with the mysteries of the noxious weed, cannabis indica.

III.

The Hasheesh Eater is a short sketch in fictional style, purporting to tell of the victim's last association with the drug before he breaks free. During a period of five years in the Orient he had "wandered through the Saharas and oases of hasheesh dreamland"; or putting it otherwise, he relates that "in the palace of alternating pleasure and torture which was for years my abiding place . . . I sometimes reveled with a joy so immense that I may well call it multitudinous; or I ran and shrieked it through its changeful spaces with an agony which the pen of a demon could not describe suitably; surrounded, chased, overclouded by all the phantasms of mythology or the Arabian nights; by every strange, ludicrous, or horrible shape that ever stole into my fancy from books of romance or tales of spectredom."

Under the care of a doctor friend he had finally

succeeded in overcoming his cravings. Leaving the luring East behind he returned home to America, where he met the younger sister of this doctor. He promptly fell in love with her, and even though he freely confessed his past addiction he was accepted by all the family with open arms. His joy was such, he says, that he was "happier than all the hasheesh eaters from Cairo to Stamboul."

One day a package arrived from the doctor who had remained in the Orient. It contained among other mementoes of the Far East a box of hasheesh. The mere sight of it brought a pallor to his cheeks. A member of the family of his betrothed playfully teased him in order to induce him to take some of it that they might witness the action of the strange drug. Spurred on by the harmless intent of the urging he was captured anew by the old temptation and yielded.

Within forty minutes he "began to feel the usual symptoms, the sudden nervous thrill, followed by the whirl and prodigious apparent enlargement of the brain." His head expanded, as he later related, wider and wider, "revolving with inconceivable rapidity in space with every revolution. It filled the room—the house—the city; it became a world peopled with the shapes of men and monsters." He spun away, he remembered, "into its great vortexes, and wandered about its expanses as about a universe."

All perception of time and space was lost, and the distinction "between the realities around him and the phantasmata which sprang in endless succession from his brain disappeared." Through his mind there flashed a series of horrible pictures, a kaleidoscope of fright and terror which he was able to describe later in all its gruesomeness.

He abruptly awoke from his nightmare, which seemingly consumed eons but actually lasted a scant few minutes. He was forevermore finished with the evil "weed of insanity." The lips of his sweetheart, he vowed, would henceforth be the only hasheesh he ever again would taste.

IV.

It may prove of interest to insert for comparison with the foregoing outline of the manner of action of hasheesh a paragraph from a modern novelist touching on the same topic (5):

"My next experiment," he went on, "was made with hasheesh, cannabis indica, which I prepared and took according to the directions of another adept, who had found that the drug produced a kind of demoniac and incessant, hearty, Gargantuan laughter, and the foreshortening of time and space. He could span the distance between London and Paris in a few seconds. Furniture and statues assumed a comic attitude; they seemed to move about and become familiar with him. He was literally aware of what the Rosny have called the *semihumanitie des choses*. I took the drug, as I have said, exactly as he directed, but the effect on me was entirely dissimilar. Immediately I was plunged into immoderate melancholy. The sight of any object immeasurably depressed me. I also noted that my legs and arms had apparently stretched to an abnormal length. I sobbed with despair when I discovered that I could scarcely see to the other end of my laboratory, it seemed so far away. Mounting the stairs to my bedchamber was equivalent to climbing the Himalayas. Although Hadja afterward assured me that I had been under the influence of the drug for only fourteen hours, it was more like fourteen years to me, which I had passed without sleep. At the end of the experiment my nerves revolted under the strain and again I was forced to take to my bed, this time for four days."

In a remarkable volume on *The Mystics, Ascetics, and Saints of India,* by J. Campbell Oman, is found this observation (p. 42):

"It would be an interesting philosophical study to endeavor to trace the influence of these powerful narcotics (charas and bhang) on the minds and bodies of the itinerant monks who habitually use them. We may be sure that these hemp drugs, known since very early times in the East, are not irresponsible for some of its wild dreamings, whilst there is good reason to believe that they have often given the user protection from malarial and other diseases."

In a footnote on the same page the author says:

"The Christian missionary sarcastically remarks, 'A great number of Hindu modern saints live in a state of perpetual intoxication, and call this stupefaction, which arises from smoking intoxicating herbs, *fixing the mind on God.*'"

V.

The thesis is advanced in *The Apocalypse of Hasheesh* that Pythagoras, the Greek philosopher who lived about five hundred years before Christ, received the inspirations for the various tenets of his school while under the influence of hasheesh. His doctrine of metempsychosis, his contention that all things are created and governed according to the laws of numbers, his socalled spheral music, and his choice of symbols, all, the author of the article advocates, bear "the legible stamp of the hasheesh eater."

His own adventures with the drug led him to that conclusion. He had passed through similar experiences while dominated by the fumes and taste of hasheesh, and thus felt capable of vouching for the verisimilitude of the ancient philosopher's system of belief. In his memories of its reaction on him he had found "echoes of a sublime rapture which thrilled and vibrated on the very edge of pain; of Promethean agonies which wrapt the soul like a mantle of fire; of voluptuous delirium which suffused the body with a blush of exquisite languor."

He had learned, too, that "hasheesh is no thing to be played with as a bauble"; for there arrives a time when "the slave of the lamp who comes at the summons of the hasheesh Aladdin will not always cringe in the presence of its master."

The meaning implied in the title is that hasheesh is a potent method of obtaining revelations into metaphysical regions. "The tendency of the hasheesh hallucination is always towards the supernatural or the sublimest forms of the natural." And these "sublime avenues in the spiritual life, at whose gates the soul in its ordinary states is forever blindly groping are opened widely by hasheesh."

It is a veritable open sesame. Problems of the universe, mystical, stupendous, are solved in a flash. The veil is lifted and the obscure made clear.

This then is the apocalypse of hasheesh.

An editorial review in *Harper's Magazine* for 1857, in discussing The Hasheesh Eater shortly after its publication in book form offered the consoling prophecy that "we are in no danger of becoming a nation of hasheesh eaters." The realistic reports that have been submitted above afford nevertheless a fertile source of speculation concerning the peculiar manifestations on the brain of man of that powerful, gripping, and enticing weed of insanity which has entangled not a few victims since its introduction into this country long ago.

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History of Medicine in Canada During the Last Century.—Canadians cannot but feel proud when they realize how much has been accomplished in less than a century, writes M. Charlton in the concluding installment of his Outlines of the History of Medicine in Lower Canada (*Annals of Medical History,* September, 1924). Early in the nineteenth century the best medical schools in the world were in Edinburgh. Among the teachers there at that time were Thomas Wakley, James Gregory, Charles Bell, James Syme, John Brown and Robert Christison. When a school of medicine was established in Montreal in 1823, it was singularly appropriate that two young physicians, Dr. John Stephenson and Dr. A. F. Holmes, fresh from Edinburgh, should be chosen as two of the teachers in it. The curriculum at this time counted but four chairs—the practice of medicine, chemistry and materia medica, midwifery, and anatomy and surgery. By 1842, however, each of these subjects constituted an independent department. A few years later, clinical medicine and surgery, the institutes of medicine comprising histology, physiology, general pathology and therapeutics, medical jurisprudence, and botany were added. In 1847 the high price of "board, including lighting, heating and attendance, exclusive of washing," was fixed at $13 a month payable in advance. In 1848 the course of study was extended from three to four years, and each candidate for the degree had to write a thesis on medicine and surgery in Latin, English or French. At this time in Montreal there was a group of noted men at the head of medicine, including F. C. and D. Arnoldi, B. Berthelet, O. T. Bruneau, William Caldwell, G. W. Campbell, James Crawford, A. Hall, William Robertson, Vallée, and Dr. Holmes and Dr. Stephenson.

The Montreal General Hospital had now been in existence ten years. With the addition of a wing added in 1832, its capacity was nineteen wards and one hundred and sixty beds. The staff at this time consisted of Dr. Holmes, Dr. Robertson, Dr. Stephenson, Dr. Bruneau, Dr. Hall, Dr. Campbell, Dr. Crawford, and Dr. Sewell.

In 1829 the medical school ceased its independent existence as Montreal Medical Institution, and became the Medical Faculty of McGill University, the first session of which took place in 1829, and in the next year the medical society, parent of the present one, was organized.

As the year 1832 marked a great advance in medical education in Lower Canada, so it did in Upper Canada. In York (Toronto) medical education was being zealously guarded and advanced by the medical board appointed by the governor. This board inaugurated the movement to build the York Hospital, which in 1824 was described as one of the largest buildings in the Upper Province, but by 1832 it had become too small, so rapidly had York, later Toronto, increased in size. In 1825 George IV granted a charter to the town for the University of Kings College, which included a faculty of medicine. In 1850 the university made it compulsory for students of medicine to have had a degree in arts. In 1795 the provincial parliament of Upper Canada passed an act forbidding the sale of medicine, prescribing for the sick, and the practice of physic, surgery, and midwifery by any one who had not obtained a license. This act was repealed in 1839 and the members of the board were organized into a corporation known as the College of Physicians and Surgeons of Upper Canada, of which the members were to be fellows. All persons then or thereafter authorized to practise physic, surgery or midwifery were to be members of the college, and the college was to license. Women might practise midwifery and those holding a diploma or license from any British university or from any college or faculty of physicians or of surgeons in the United Kingdom, and also all army and navy surgeons. In 1840 the former act came into force again and a new board was formed. In 1853 an act of the Legislature swept away the medical school of the university, which, whatever its faults, had in it the elements of ultimate success, and left the profession and the public at the mercy of irresponsible schools without foundations and dependent on private enterprise. "There could be no doubt that the abolition of the Faculty of Medicine of the University of Toronto retarded seriously the growth of the profession in this country."

In 1850 the Upper Canada School of Medicine was established in Toronto, which in its first session became the Medical Faculty of Trinity College, and after three years passed out of existence because the professors resigned on account of certain vexatious religious tests to which they were submitted by the corporation. The Faculty of Medicine of Victoria College was next established in Toronto but ceased in 1869. Then another school was organized in form and name a continuation of the old Toronto School of Medicine, and began operation in cooperation with the University of Toronto in 1857. In 1870-71 a new medical faculty was organized in Trinity University. The first medical journal published in Canada was the *Upper Canada Journal of Medical, Surgical and Physical Science,* 1851-52. Later came the *Montreal Medical Gazette,* the *British American Medical and Physical Journal,* the *Canada Medical Journal and Monthly Record of Medical and Surgical Science,* the *Canada Medical and Surgical Journal,* the *Maritime Medical News,* and the *Montreal Medical Journal* which became in 1910 the *Canadian Medical Association Journal.*

In 1720 the presence of plague epidemics in Europe brought up the question of quarantine of Canadian ports, and the writer gives a detailed history of the whole problem in that country.

In 1843 the McGill Medical Faculty founded the University Lying-In Hospital; there was another at the Hôpital de St. Pelagie. The first dispensary in the city was opened also in 1843, and in the same year the Legislature passed the Anatomy Bill, and a new bill for regulating the study and practice of medicine. An important item was the penalty clause protecting the licensed practitioner from quacks. In 1848 Dr. Douglass, of Quebec, manufactured chloroform and it was successfully used in one of the hospitals in that year. In 1851 a new medical school was started under the name of the St. Lawrence School of Medicine of Montreal, but it lived for a short time. A new hospital was also started called St. Patrick's Hospital, which was absorbed after an existence of twelve years by the Hôtel Dieu.

In writing of the men responsible for this progress in medical education in Canada during the last century, the writer says: "From the first quarter of the nineteenth century when laws regulating the practice of medicine began to be made, steady progress has been made towards the ideal. Canada has provided well equipped men, who in their character, training and disposition were worthy of the great trust reposed in them in the bettering of medical education. They gave a wholesouled devotion to their work. Their enthusiasm and devotion were in turn communicated to their students and those students, who in turn were to become teachers, seemed to be embued with the same love of their work and followed in the footsteps of their masters."

The Skin of Our Ancestors.—That from the most remote times our ancestors have had to suffer from various dermatoses, is a fact almost assured, although it cannot be demonstrated. This Prof. Paul Raymond tells us (*Æsculape,* April, 1925) in an article covering the period from the reindeer age to the time of the Roman republic. This fact seems to be well substantiated from pathological bone fragments from prehistoric graves. Among these bones found in graves of the stone age, the bronze and the iron age, may be seen evidences of morbid states accompanying ordinary cutaneous diseases such as tuberculosis, for example, or syphilis. Although we have no definite proofs, we have at least numerous indications of the care of the skin taken by our forefathers of the reindeer age and the periods following. "For example, I once found," he says, "in a grotto a stone plate with a central hollow, a veritable cup of colors bearing still traces of a pomade of iron oxide. Beside it was pestle still covered with clay and a considerable quantity of reindeer bone, crushed for extracting the marrow." In other caves have been often found, beside similar animal bones, fragments of red or yellow ochre, deposits of manganese in fossil shells, leaving no doubt of their use as skin ointments for esthetic purposes, or of a therapeutic which we must guess at rather than prove.

Then appear at the end of stone age and especially in the copper and then the bronze age, metal instruments, pure copper or bronze, whose use is evident, proving that care of the skin, painting of the body, and tatooing were common customs in prehistoric times. Of their use until they became abuses, then diseases, is only a step, and we know in our times all the dermatoses that must have been the results of paint and cosmetics with which the ancients took pains to ornament their countenances "to repair the irreparable outrage of the years." [The quotations are the author's.] To the iron age belong the silver or bronze instruments found in the tombs of the Mycenean epoch similar to those depilatories which later the Romans used so much. At this epoch preceding the Roman conquests the use of pomades and paint already existed, for Pliny and Cæsar tell us that the Bretons colored themselves with pastels, the Picts owed even their name to the paint which they used similarly. From the Roman epoch we recognize the socalled tear vases, which were nothing more than vessels for unguents, the Romans including under this term many more medicaments than can rightly be called ointments. Ovid, Tibullus, Propertius, Juvenal and especially the naughty tongue of Martial discourse upon the multicolored paints which the beauties of Rome used for concealing their wrinkles.

The hair was, we know, among the Romans of both sexes the object of special care, and, if with us baldness is sometimes respected, it was not at all the case in Rome. It was concealed by every possible means and it was said that it was only to hide his bald head that Cæsar always wore a crown of leaves in public. Tibullus tells us that his contemporaries knew how to turn raven black a head as white as snow by means of nut shells. Ovid speaks of the juices of German plants, and Martial adds: *Tum subito corvus, quae modo cycnus erat.*

Medical Details in the History of Apollonius of Tyre.—Among the romances of the Greek Sophists composed between the first and fifth centuries of our era, beside the Daphne and Chloe of Longus appears the History of Apollonius of Tyre, almost forgotten today, but which enjoyed in the Middle Ages a great popularity. In this romance M. Bugiel in a paper recently read before the Société Française d'Histoire de la Médecine (*Æsculape,* May, 1925) has pointed out some interesting details of medical history. He has made a long study of them, and, by comparing them with many passages from the ancient Greek physicians, shows us that the author, Apollonius of Tyre, must have been well acquainted with the medical science of his day.

The promenade on the seashore of the physician Cheremon with his pupils proves that the doctor was always accompanied by students when he made his visits to patients. Noteworthy also is the passage where one of the pupils of Chemeron examines the corpse which has been cast up by the sea. This medical examination proves to us that physicians of the third century had at their disposal as means of diagnosis palpation, examination of the pulse, investigation of respiration and temperature of the body. They followed the directions of Hippocrates: "Note from the first the resemblances and dissimilarities with the state of health, the most important for their results, the easiest to recognize being those which supply all the means for observation; examine all you can see, feel, hear, all that can be perceived through sight, touch, hearing, smell, taste, and the use of intelligence."

Editorial Articles

HEALTH EDUCATION IN HIGH SCHOOLS

Dr. Franklin W. Barrows, of the New York State Department of Education, makes a stirring plea for the introduction of health education courses into all high schools, in the *Nation's Health* for November, 1924. His idea is to base these courses on what the young men and young women of today really want the high school to teach them in continuation of their elementary courses in hygiene. Dr. Barrows believes that they want "information on personal hygiene that they can make use of; more knowledge of the human organs and functions; more human biology; hygiene of the various organs."

Dr. Barrows bases his belief partly on the fact that the question was answered by a group of high school students themselves who were asked what they wanted in this line. One fifth of the number asked for heredity; sex problems and sex hygiene came second in choice. His plan for a course suitable for these high school boys and girls would include, first a general review of hygiene, exalting it as "the natural fruit of a genuine acquaintance with the body and its workings." Two topics should receive special emphasis because they are not fully treated in the grades, namely, nutrition and reproduction, with its cognate endocrinology. Next group hygiene—family, community, state, nation, should be emphasized, leading up to the hygiene of international relationships. Then courses in safety first, home nursing, etc., may be given, as simply as possible so as not to overwhelm the student with an overweening sense of responsibility toward the welfare of the universe. Industrial health may be touched upon in some of its phases, especially that of vocational guidance. The last high school year is the time to study mental hygiene, in Dr. Barrow's opinion, and its relation to individual efficiency, fatigue, the use of leisure, and the prevention of nervous and mental disturbances. He makes a special plea for the proper teaching of sex hygiene. "Our morning papers," he writes, "do not scruple to supply the breakfast table with front page details of vulgar and questionable 'romances' unearthed in our criminal courts and enlivened by columns of phosphorescent rot on love nests and love babies, while of sane and serious material on the source of this lurid stuff the editor and all his talented assistants give us not a single word. Too many of our young women, some of them scarcely out of school, bring forth their first born in ignorance, dread, and apprehension, knowing little or nothing of the functions of motherhood, its dangers or its compensations. The home, the church and the school in this intelligent age do less to prepare them for the responsibilities of propagation than the stockbreeder is doing for his sows and his mares." He adds that such a course should include in part reproduction, development, from birth through adolescence, parenthood and child care, artificial selection, heredity, Mendel's law, feeblemindedness, race poisons, social health and disease (without emphasis on disease); and the sanctity of the family. He states that he is sure that there is no high school in our country that cannot find available some man to teach such things to the boys, and some woman to do the same for the girls.

MALARIA IN COLD CLIMATES

It seems that cold is not a barrier to the pernicious activities of the malaria bearing mosquito, as malaria is extremely prevalent at the present time in the cold regions of Russia. During the war in 1915 certain parts of Mesopotamia, in extremely cold weather, were infested with malaria. On account of the cold weather, no one suspected the presence of malaria, and it was not until the arrival of a medical man, who had had wide experience in tropical diseases, that a correct diagnosis was made. It has been suggested that if in Mesopotamia, as in East Africa, malaria experts had been sent up to report at the beginning of the campaign instead of when it was nearly over, thousands of lives would have been saved. It has been further stated that frequently in malaria districts in cold weather, when no signs of breeding remained, infected female anopheles, not hibernating but living in a state of biting activity, may be found. But it has been declared recently by a medical man in Russia that there mosquitoes breed in the water butts in the houses during the winter.

If this is really true it renders the problem of eradication a difficult one indeed. If, as in other regions, breeding ceases in the cold weather and the males die out, the curtailment of the spread of the disease is by no means impossible, in spite of the fear that all the usual mosquito sanitation methods during the summer may be out of the question among so ignorant a population. Compulsory house fumigation and disinfection during the winter, together with individual quinine treatment, might have beneficial effects, if it were not for the hopeless lack of education said to exist in South Russia.

If the malaria mosquito can transmit malaria in cold weather then malaria is an even more prevalent and deadly disease than it is supposed to be. There is little doubt that malaria is the most injurious disease to health if not the most deadly known. During the war it took greater toll of the combatants than any other disease. In Macedonia it was endemic and killed and incapacitated thousands. It was rife in Mesopotamia and more or less prevalent in other areas in the Near East in which fighting was carried out.

Why should not a world wide campaign be waged against malaria, at any rate in populated districts and where such a campaign is likely to be successful? It is a disease, the abolition or abatement of which should appeal especially to Americans, as there are many regions in this country in which it is endemic.

TONSIL FETISHISM

Many convalescent homes devoted to the care of children with rheumatic heart disease refuse admission to all candidates who are still in possession of their tonsils. As a consequence, the physicians of many cardiac clinics (in New York city at least) are compelled to have tonsillectomies performed on all patients who need convalescent care. The evidence that removal of the tonsils will prevent recurrences of rheumatic infection is not convincing and the operation is not so innocuous as many would have us suppose. Many children require months to recover from the general deleterious effects of a tonsillectomy. Crowe (*Bulletin Johns Hopkins Hospital,* 28:1; 1917) and his coworkers, in a carefuly study of patients whose tonsils had been removed, reported that of twenty-five patients who had had rheumatic fever, recurrences took place in four after tonsillectomy, and that of twenty-four patients who had had chorea, the symptoms returned in eleven. These recurrences occurred in from three weeks to three years after the operation. On the average the patients were under observation only two years. More recently St. Lawrence has reported a more intensive study of eighty-five children who were observed during an average period of three and one half years after the operation was performed. Thirty-one of these children, or 36.5 per cent., showed recurrences in this period. Recurrences were more frequent in those with chorea than with the other rheumatic manifestations. St. Lawrence stresses the fact that many patients who had had constant and frequently recurring manifestations for a period of years before the operation remained free of symptoms thereafter. On the other hand, he reports cases in which there had been no history of tonsillitis or any rheumatic manifestations before the tonsillectomy was performed and yet, which, years after complete tonsillectomy, showed acute rheumatic fever or some other allied manifestation. Many patients develop acute pharyngitis instead of tonsillitis after their tonsils have been removed. Hunt and Osman (*Guy's Hospital Report,* 73; 383; 1923) who have studied the after histories of 114 patients who had been patients in Guy's Hospital with acute rheumatic fever. found a greater percentage of relapses of manifest rheumatic fever in the patients whose tonsils had been enucleated. Of 166 patients whose tonsils had been completely removed, thirty-five, or fifty-three per cent., had definite recurrences, while of seventy-eight nonoperated patients, thirty-three, or forty-two per cent., had renewed rheumatic attacks. Their figures seem to show that recurrences are more frequent in patients with rheumatic heart lesions. This suggests the possibility that the virus may remain latent in the heart and from there initiate a new systemic infection. Ingerman and Wilson (*Journal A. M. A.,* 82; 759; 1924) were unable to establish the fact that rheumatic recurrences were lessened as a result of tonsillectomy.

In view of the doubtful value of tonsillectomy in the prevention of rheumatic reinfection, the convalescent homes in question are undertaking a grave responsibility in making this operation a prerequisite for admission. Physicians who yield to their ruling, without determining for themselves whether or not there is a strict indication for the removal of the tonsils of the applicant, are not serving the best interests of their patients. In this, as in all medical problems, generalized and blanket rules cannot, with justice to the patient and with adherence to a spirit of strict scientific inquiry, be substituted for a careful and conscientious individualization.

DISEASES OF ADULT LIFE

Arteriosclerosis is the most prominent disease or condition which tends to shorten the span of life. It is a symptom rather than a disease, although authorities do not agree as to its precise etiological factors. Some hold that arterial thickening is frequently of syphilitic origin. Sir Thomas Horder, who writes on the subject in the *Practitioner,* July, 1925, is utterly opposed to this theory, and states that many, if not most of the actual cases that come under observation are obscure in their pathogenesis. The most popular current view is that they are toxic. The toxemia is attributed to absorption from the bowel of certain products of microbic activity or to metabolic defects. Metchnikoff, the first great apostle of the doctrine of autointoxication, said in

Annales de l'Institut Pasteur, 1910, that the digestive tube is constantly elaborating poisons of microbic origin which are capable in time of setting up physiological arteriosclerosis. Bishop, in this journal for September 9, 1911, said that the vast majority of cases of arteriosclerosis as they occur in adult life are due to the indirect influence of intestinal putrefaction upon the blood vessels and nervous tissue. Horder points out that two possible factors are prone to be overlooked, inheritance and nerve strain, but admits that the causative factors and the indications given for treatment may be considered under three heads, nerve strain, microbic infection, and biochemical errors. It is pointed out also that the term autointoxication has changed its meaning. Originally used to connote toxic states arising as the result of biochemical defects, gout, acidosis and so on, it has come to mean a condition of poisoning due to the absorption of microbic toxins. The author does not commit himself to the theory that intestinal toxemia is the root of the trouble, although he allows that the colon may be the reservoir of poisonous substances, hence may come the autointoxication. He believes that the nerve strain plays a prominent part in the causation of arteriosclerosis, indeed it may be gathered from the tenor of the article that this appears to be his pet view. However, he thoroughly subscribes to the efficiency of efficient drainage, presumably by way of the gastrointestinal and urinary tracts. As for drugs, in his experience, iodine seems to be the most helpful. The keynote of treatment is moderation in all things, the avoidance of nerve strain, and the securing of plenty of rest.

TYPHOID FEVER

In accordance with instructions received from the Commissioner of Health of New York City, a study was made of the features of public health interest connected with the recent typhoid fever outbreak in the city. *Monthly Bulletins* Nos. 2-4 of the Health Department are devoted principally to this subject, which is reported by Dr. Louis I. Harris, director of the Bureau of Preventable Diseases of the Department of Health of New York City.

The report states that the outbreak came as a sharp reminder that the gains we have made in the protection of public health against typhoid fever and other diseases are insecurely held, and depend upon a vigilant, unremitting and firm control of the various safeguards which we have learned to erect against communicable diseases.

One peculiarity of the recent outbreak was that in not a few of the cases the common accepted diagnostic signs and evidence of typhoid fever were lacking until the disease had nearly or entirely run its course. "This observation argues powerfully for the need of instituting typhoid treatment and precautions in all obscure cases marked by a continuous febrile course, as a measure of protection to the patients and the public. It shows the wisdom of repeatedly submitting specimens for culture, Widal tests, differential counts, and stool examinations, in all masked and atypical cases." "If this outbreak had been due to a polluted water or milk supply, it would inevitably have affected many times the number of children recorded."

Of the 914 cases recorded in the outbreak, 116 residents and fifty-nine nonresidents who were included gave a history of having been out of town during the period immediately antedating incubation. The majority of these had eaten oysters while out of town, while others gave a varied history of their activities and presumable exposures. The close social, commercial and transportation ties that bind New York city and a host of other cities, near and distant, make for reciprocation in the transmission, not only of typhoid fever, but also of other communicable diseases, so that we are constantly reminded that there is a community of interests in health protection among all cities that makes the health condition of any important city the concern of all others.

One death occurred among twenty-eight immunized cases, a case fatality rate of only three and six tenths per cent. There were forty-two patients who received one or more injections after atypical symptoms of the disease had made their appearance. In such individuals the injections were obviously impotent for preventive purposes for five ended fatally. "If the new and generally unknown method of administering a vaccine containing killed typhoid bacilli by mouth, following a small dose of oxgall, is found to be as effective as it is said to be by Besredka and by others, it shoud go far to overcome the general disinclination of people to submit to vaccination by hypodermic injections, and prove a valuable measure of public health to those who go out of town."

The 506 cases giving a definite oyster history represent approximately seventy-eight per cent. of the excess number of typhoid cases of the recent outbreak. Making allowance for minor outbreaks due to carriers and lesser causes, it seems that there is a strong likelihood that infected oysters may have played a larger part in past years than has been suspected, and that this may have escaped detection because the cases caused by them were lost in the general shuffle during the summer and fall seasons, and because probably the sources of pollution of oyster beds have increased slowly until they reached a point where trouble was caused on a wholesale

scale. The fact that the majority of cases of typhoid fever in the period under discussion were confined to the well to do argues for oyster infection as the principal cause, since these people, needless to say, are more given to dining out and to the consumption of rich foods than the poor.

The remainder of the report (the third section published in the June issue of the *Bulletin*) is devoted chiefly to the citation of further indications that the source of the infection was polluted oyster beds, not those of West Sayville alone, to which the outbreak was attributed, but to many others. Ways in which oyster beds receive contamination are described, especially those near New York, and a tentative program is suggested to remedy the situation.

The report states also that a relatively large number of the cases of the recent outbreak were apparently due to bathing in polluted water, testifying to the inevitable increase of pollution due to the rapid growth of many cities and towns adding their share to the waste and sewage discharged into the various waters that were apparently responsible for these infections. Another point mentioned is that the number of typhoid carriers is, naturally, increased with an increase in the number of cases. A few months ago there were 160 carriers under supervision; there were at the time of the making of the report twenty-six more temporary carriers, and twenty-six more convalescent carriers.

SIR WILLIAM OSLER

Although the late Sir William Osler was born and received his medical education in Canada and lived for many years in England, where he died, he passed the best part of his life and made his reputation in this country. As a matter of fact, the medical profession here regard Osler as an American physician. It is fitting therefore that his life should have been written by a distinguished professor of Johns Hopkins Medical School, where Osler was also a prominent figure. Harvey Cushing, the author of the biography just published by the Oxford University Press, was a colleague of Osler and knew him intimately from the medical as well as the social and domestic viewpoints.

William Osler was born in a Canadian parsonage near Toronto, by descent a Cornishman and a very Celt of the Celts in temperament, but strictly disciplined. First of all, Osler was a teacher, and it is largely due to his efforts that medical education in this country has advanced to its present high standard. He was well endowed by nature and by training for bringing order out of what might almost be termed chaos, as he possessed in the highest degree the iron hand in the silken glove and wonderful gifts of intuition. He had both personality and charm, an alert brain, a wonderful memory, and untiring industry. However, it was his love of humanity, expressed with Celtic lack of reserve, which more than scholarship, diagnostic ability, or other attributes made him the power he was. The heart in Osler spoke more powerfully than the brain. They who met him felt that he was genuine; he was courteous always and made personal friends of those who worked with him.

Osler excelled in placing his views on paper and his writings were real literature. His textbook of medicine was a stupendous success and in the fields of pure literature he wrote with the wit, buoyancy, almost abandon of the Celt, albeit controlled by knowledge. As a literary medical writer Osler may be compared with Sir Clifford Allbutt, another great physician of commanding knowledge and personality combined with exceptional powers of expression. Osler was a pioneer of preventive medicine, perhaps it may be said creative medicine, and somewhat of a drug nihilist. He was a master physician and a reformer, whose clinical knowledge told him that prevention was better than cure, an axiom which he taught and practised.

While Osler's career is his monument, the book by Harvey Cushing will help to keep his memory green. Without a biographer nothing is remembered of many great men.

HEALTH CONDITIONS FOR WORKERS IN RUSSIA

The British Labor Party recently sent to Russia to study conditions there for workers four women, three of whom are organizers in various trades and the fourth a worker in a textile union. A preliminary report of this visit has recently been issued which gives some interesting data on what the present Russian Government has been able already to accomplish along lines of improving working conditions.

Women are encouraged to enter as far as possible all classes of work; they are encouraged to become skilled in every branch of industry, and they receive equal pay for equal work. The entry of women into the trades is facilitated by the fact that most of the factories have day nurseries and even kindergartens where the children may be left with safety and profit. In most cases the children left thus are cared for and fed free of charge.

Every woman factory worker gets two months' leave of absence before and after the birth of a child, with full pay; in addition an allowance is given, either in money or kind—usually the latter—to provide for the baby's clothes and other necessaries; and free medical attention is supplied.

Women clerks and brain workers usually get six weeks before and after. Work canteens in the factories provide meals for the employees and their children, with a view to relieving women from some of the drudgery of home keeping, and there are also community and cooperative dining rooms. Most factories have a club for entertaining the workers in the evening, and, in order that the mothers may participate and attend educational and trade union meetings, here again special accommodations with trained attendants are provided for the children.

A minimum of two weeks' vacation on pay is statutory, and there are a number of religious and national holidays. An extra two weeks' vacation is granted to workers in unhealthy or dangerous trades. One of the most interesting and beneficial features of the present system is the large number of rest homes where the people may spend their vacations, all free of charge. These homes are for the most part the mansions and palaces of former Russian princes, nobles and rich merchants. All traveling expenses are paid for the workers, and they receive wages in full during their rest periods. Organization is being perfected of a system of sanitoriums and health institutes for the care and treatment of various diseases, such as tuberculosis, nervous diseases, and heart trouble. In many parts of the country improved workmen's homes and peasants' dwellings are being built, with all the modern sanitary conveniences. This means of course a complete revolution in the life of the people. Garden cities planned after those in the United States and some of the European countries are being constructed out of the profits of the various industries.

In outlining this report the *Manchester Guardian Weekly* adds: "An enormous amount of work still awaits the Soviet authorities, not only in the restoration and improvement of industry and agriculture, but also in the sphere of housing, education, public health, and particularly in the construction of a proper draining system. Nevertheless, what has already been done in most of these directions proves that, even unaided, Soviet Russia is making good."

TROPICAL HEALTH EXHIBITS AT WEMBLEY

Among the most interesting exhibits at the British Empire Exhibition are those of the Tropical Disease Section. Two scenes, the first entitled ignorance and the second knowledge, stand side by side in this section. The first shows an English explorer, wasted almost to a skeleton by repeated attacks of malaria. Attended by two faithful servants, he lies at the point of death just outside a miserable native hut in an open space in the tropical forest. Across the foreground a sluggish stream crawls through the undergrowth, which, together with the great trees, surrounds the sick man and his servants with a rank profusion of vegetation, brightened with a flock of brilliant tropical butterflies. The stream is the breeding place of countless hordes of mosquitoes.

The second setting shows us the same spot twenty-five years later, when "knowledge" and intelligent human effort have transformed the whole place, which has now become a centre of health and prosperity. The forest has been cleared away, the stream confined between grassy, sloping banks and cleared of all vegetation. A film of oil is continuously and automatically spread over its surface as a protection against any mosquito larvæ. The primitive hut has been replaced with well built native cabins, and a bungalow for the white man equipped with screens and mosquito proof beds stands by. The settler has his wife with him, and, apparently they are now "living happily ever after." These two exhibits have continuously drawn immense crowds.

Throughout the whole health exhibition prevention is emphasized in the account of each disease. An original device presents statistics graphically, and so simply that no one could fail to grasp their significance. Sleeping sickness, malaria, blackwater and yellow fevers are illustrated by photographs and models. The plague exhibit contains a collection of interesting historical pictures showing ancient superstitions connected with the disease, and specimens of some of the leaden crosses which it was the custom to bury with plague corpses. Dysentery, hookworm, and cholera are described, as well as the less known diseases, such as elephantiasis, bilharziasis, beriberi, and kalaazar. Some of the representations of leprosy are almost too realistic for the layman in the horrors they depict, but assurance is given that the disease is not now considered as inevitably hopeless. One of the most interesting exhibits is that showing methods of protection against sunstroke, and the terrible heat of the tropics.

Around the whole exhibit of the tropical disease section runs an attractive frieze in black and gold with quotations from famous experts in tropical diseases and illustrated with insect and animal designs. Chaucer's statement, probably forgotten by most of us, even the doctors, is included that "Men wel ofte ben slayn with bytinge of smale flyes."

News Items.

Harvey Society Lecture.—The first lecture of the Harvey Society for the season was given Saturday evening, October 3rd, at the New York Academy of Medicine, by Dr. F. R. Nager, professor of otology of the University of Zurich. His subject was New Problems in Otology.

New York Academy of Medicine.—The first stated meeting of the New York Academy was held October first, the program being presented by the Albany Medical College. The first meetings of the sections on surgery and on dermatology and syphilis were held during the week. The sections on pediatrics and on neurology and psychiatry will be held October 10th and October 13th, respectively.

Prize Awards.—The Leonard prize of the Röntgen Ray Society, in amount one thousand dollars, and the gold medal of the American Radiological Society, have each been awarded to Dr. Everts Ambrose Graham, Dr. Glover M. Gopher, and Dr. Warren H. Cole, of St. Louis, jointly for investigations in the diagnosis of gallbladder disease.

West Virginia in Registration Area.—West Virginia has been admitted to the birth and death registration areas for 1925.

Plague Quarantine Lifted.—The ports of Oakland and San Pedro, California, and New Orleans have been declared free from plague by the Surgeon General of the Public Health Service.

American Stomatological Association.—This organization has been admitted to membership in the International Stomatological Association. Dr. Alfred J. Asgis, of New York, has been appointed adjunct secretary general.

Chicago Medical Society.—The annual dinner of the Chicago Medical Society will be held October 14th, at which time new officers will be installed. Dr. William Allen Pusey will be toastmaster.

Physiotherapeutic Convention.—The fourth annual Physiotherapeutic Convention, held under the auspices of the educational department of H. G. Fischer and Company, will take place in Chicago, October 12th to 16th.

Cost of Psychiatric Treatment.—A recent report indicates the per capita cost of treatment in the four state institutions for mental defectives from $178.33 to $407.93, the latter being a state school for the feebleminded.

New York Electrotherapeutic Society.—The fall meetings of this society begins October 7th, and will be held weekly, the meeting places will alternate between the New York Academy and the City Club, the first one being at the Academy.

Medical Study in Austria.—Physicians in good standing in the American Medical Association, who are going to Vienna to study, will be granted, on presentation of a written statement from the Association, a reduction of fifty per cent. in the Austrian visé fee.

Fund for Nutritional Education.—A fund of one hundred thousand dollars, payable in five annual installments, has been given by Mr. W. B. Ward, in behalf of the Robert Boyd Ward Fund, to the American Institute of Baking, for the establishment of a department of education in nutrition.

Toledo Service Bureau.—A service bureau has been established at the Toledo Academy of Medicine, financed by the academy as a humanitarian service. During the first month there were nearly three thousand telephone calls, mainly by patients wishing to locate their physician.

Addition to Mount Sinai Hospital.—A nurses' home accommodating 480 nurses, with a training school, is to be built in connection with Mount Sinai Hospital, New York. The building will be fourteen stories high, and there will be connections by tunnel with the various other buildings of the hospital. The estimated cost is two million dollars.

Pittsburgh Medical Centre.—The University of Pittsburgh has announced plans for a $14,000,000 medical centre, to include Presbyterian, Children's, Elizabeth Steele Magee, Montefiore, and the Eye and Ear Hospitals, with a combined capacity of 1350 beds, and also a $2,000,000 medical unit.

Police and Fire Surgeons to Meet.—The fourth annual convention of this organization is to be held October 6th and 7th, at Grand Rapids, Michigan. One of the matters to be dealt with is the standardization of medical and physical requirements for civil service employees, especially the police and firemen in the larger cities.

Christmas Seals.—Plans are already being made for the eighteenth annual sale of the National Tuberculosis Association's Christmas seals. The organization is prepared to furnish copy for advertising and also brief articles for newspaper and periodical publication. The seal is of an especially attractive design.

Typhoid Fever in Ohio.—Reports of the state department of health show an increase of thirty-five per cent. in cases of typhoid fever, over a year ago. Water supplies are at the lowest level in three years, and in the most polluted condition ever known. There are two widely separated epidemics, one in Athens County in the southeastern part of the state and one in Wood County in the northwest.

American College of Radiology and Physiotherapy.—The annual meeting of this association will be held in Chicago, October 19th to 22nd. Dr. Curran Pope, of Louisville, Kentucky, is president of the society. Clinics will be held at three Chicago hospitals. Guest speakers at the meetings will be Dr. William Allen Pusey and Dr. D. J. Davis, of Chicago.

Association of Military Surgeons.—This organization will hold its annual meeting at the Waldorf-Astoria, New York, October 8th to 10th. Official delegates from eighteen foreign countries will participate. The program will include visits to West Point, Ellis Island, the Army Medical Supply Depot, the Naval Hospital and Medical Supply Depot in Brooklyn, the airdrome at Mitchel Field on the day of the Pulitzer race, the Rockefeller Institute and various hospitals, and a review of and demonstration by the 102nd Medical Regiment of the 27th Division.

Civil Service Examinations.—The U. S. Civil Service Commission announced examinations for junior medical officer, assistant medical officer, associate medical officer, medical officer, and senior medical officer, at entrance salaries from $1,860 to $5,200, with advancement from $2,400 to $6,000. Applications will be received until December 30th, blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C.

The U. S. Public Health Service announce examinations for entrance into the regular corps of the service, to be held December 7th, at Washington, Chicago, New Orleans, and San Francisco. Information may be obtained from the Surgeon General.

Rural Hospitals.—With the purpose of improving rural medical nursing and hospital care, the Commonwealth Fund of New York is offering to assist in the buildiing of one hospital in a rural section. Certain conditions are laid down governing the distance from existing hospitals, number of physicians for staffing the hospital, character of highways and transportation lines, willingness and ability of the community to defray deficits from operation. The fund offers to pay two thirds of the cost of construction and equipment.

If the experience in building one such hospital seems to warrant an extension of the program, the fund will consider making a like offer to other districts needing a hospital. Applications are now being received, and considered. It is probable that a decision as to the first unit will be made in the early fall.

Postgraduate Courses in New York.—The Beth Israel Hospital announces postgraduate courses in diseases of the heart and arteries, in charge of Dr. Morris H. Kahn, to be given between October 5th and December 11th.

New York University and Bellevue Hospital Medical College announce a three weeks' course in ophthalmology to be given by Professor Basil Graves, in October. A three weeks' course in regional anesthesia as applied to general surgery will be given during October, December, February, and April, by Gaston Labat, formerly of the Mayo Foundation.

Columbia University announces eight weeks' courses in general medicine, dermatology, pediatrics, gynecology, neurology, ophthalmology, otology, surgery, and surgical pathology, to be given at Mount Sinai Hospital. The first series will last from October first to December first. Information may be obtained from Mount Sinai Hospital. Similar courses in neurology and psychiatry, to be given in other institutions, are also planned; application should be made to the medical school of Columbia.

Personal.—Dr. William D. Haggard, president of the American Medical Association, was principal speaker at the meeting of the Northwest Alabama District Medical Association, held at Decatur, Alabama.

Dr. John L. Kantor, of New York, has moved his office to 145 West Eighty-sixth Street.

Dr. Byron Sprague Price, of New York, has moved his office to 43 East Fifty-third Street.

Dr. August M. Sartorius, of Jersey City, has sailed for two months in Europe.

Dr. Gabriel J. Kraus, of Philadelphia, has been honored by the Order of Haller Swordsmen from the Polish Government in recognition of his services during the war.

Dr. James D. McKinnon and Dr. Edgar R. Maillard have been appointed assistant pathologists to the New York state department of health laboratories.

Dr. Robert T. Frank has located at 10 East Eighty-fifth Street, New York. He is now gynecologist to Mt. Sinai Hospital of New York.

Dr. Emmanuel Giddings, who was physician in charge of Willard Parker Hospital and is now physician in charge of Riverside Hospital, has been appointed superintendent of the Reconstruction Hospital, and assumed his new duties October 1st.

MEETING OF THE CANADIAN MEDICAL ASSOCIATION AT REGINA, SASKATCHEWAN

The fifty-sixth annual convention of the Canadian Medical Association opened at Regina, Sask., on June 28th. The attendance was fairly good, among those present being Mr. H. W. Carson, F.R.C.S., senior surgeon of the Prince of Wales Hospital, Tottenham, London, England. At a luncheon given in honor of the visiting medical men, Dr. J. G. Fitzgerald, of Toronto, contrasted the progress made in Canada in the war on tuberculosis with that reached in Denmark, one of the most advanced countries in the world in this field. Much was being accomplished in Canada, and medical men here had contributed much toward the fight against the dread scourge. In Denmark, however, even greater advance had been made, and this little country, the speaker asserted, was today showing the way to the rest of the medical world in the encouragement of fundamental researches. Denmark boasted of a foundation for the maintenance of scientific laboratories in Copenhagen, which during the past ten years had contributed greatly to the advancement of knowledge in physics, physical chemistry and other scientific subjects.

A grant of $30,000 to carry on postgraduate extension lecture courses throughout the length and breadth of Canada from the Sun Life Insurance Company of Canada has been accepted by the Canadian Medical Association Council. According to the provisions of the grant, the association will control and manage the details of the organization and the development of the service, which will be chiefly directed toward helping the rural medical man to keep abreast of the advance in medicine.

A report on medical education submitted by Dr. D. J. McLean, of Winnipeg, expressed the need for a course in medical schools to be directed toward turning out general practitioners fully qualified to render a public service, rather than purely scientific men. A report on interprovincial relations laid stress on the importance of standardizing the preliminary education for medical students and the need for a uniform standard of licensure. Dr. T. C. Rontley, of Toronto, secretary of the association, announced that negotiations had been opened with the Royal College of Surgeons in England whereby in future members of the Canadian medical profession might obtain membership in the college.

Hailed as the greatest contribution to medical science, the discovery of insulin, the advance of experimental work in connection with the thyroid gland, were outlined by Dr. J. P. Collip, University of Alberta, in a scientific address. Dr. Collip, who was associated with Dr. Banting and Dr. Best in the perfection of insulin, dealt with the physiological significance of the extract with which it is hoped ultimately to effect some cures of serious complications resulting from certain operations affecting the thyroid glands. The researches so far, he explained, had been confined to experimental work upon animals, particularly upon dogs. A peculiar form of convulsion had been associated with operations on these glands. By injection of the new extract these severe symptoms could be completely controlled, so long as regularly administered. Dr. Collip stated definitely that the extract had not been used in the treatment of human patients, adding that clinical use of the remedy would of necessity have to be carefully worked out before it could be safely administered to a human subject. But, he asserted, results obtained already gave rise to high hopes for such cases suffering from these hitherto severe and untreatable symptoms. The extract, the speaker explained, was obtained from the ox.

Dr. Charles Hunter, associate professor of clinical medicine, University of Manitoba, stated that a large percentage of the sickness assailing mankind throughout the world was directly attributed to the state of mind and that a great deal could be accomplished in overcoming this condition by the correlation of psychotherapy and medical science.

Mr. H. W. Carson, F.R.C.S., London, stated that cancer, dependent upon its situation, was absolutely curable, provided that treatment was applied in the early stages of the disease. He maintained that surgery was the only safe method to be used in incipient cases.

Dr. M. M. Seymour, Deputy Minister of Health for Saskatchewan, foreshadowed the day when communicable diseases would cease to be a menacing problem to mankind.

A keener appreciation of the work carried on by the research worker was the gist of the remarks by Dr. J. G. Fitzgerald, director of the Connaught Laboratories, Toronto.

Dr. Stuart Pritchard, of Battle Creek, Mich., emphasized the point that tuberculosis was not nearly such a menace to civilization as was popularly imagined. Tuberculosis, he said, was now known to be a curable disease, and the dangers of infection from contact were considerably exaggerated in respect of the adult. Children, however, were more subject to infections.

MEETING OF THE FIFTH BRITISH CONGRESS OF OBSTETRICS AND GYNECOLOGY IN LONDON

At the house of the Royal Society of Medicine, I Wimpole Street, London, the fifth British Congress of Obstetrics was held April 22d, 23d, 24th and 25th. The president was Dr. H. Russell Andrews of London and the secretaries Dr. Clifford White and Mr. John D. Barris of London. The meeting was well organized and managed and there was a good attendance. Several Americans and Canadians were present, among them Dr. Franklin Martin, of Chicago. The papers read were of a high standard and the question of puerperal sepsis from various aspects was considered. In Great Britain puerperal sepsis causes much mortality and its etiology is still a matter of doubt. The first paper read was by Sir Ewen Maclean, professor of obstetrics and gynecology in the Welsh National School. He dealt with the condition in Wales at length and emphasized the pressing need for better houses and more health visitors, trained midwives, maternity homes, and hospitals.

Dr. Gibbon FitzGibbon, master of the Rotunda Hospital, Dublin, and Dr. Joseph W. Bigger, pro-

fessor of bacteriology in the University of Dublin, read an account of an investigation into the etiology of puerperal sepsis.

Swabs were collected from the vagina before and after delivery and from the uterus after delivery in fifty normal women. In all 158 swabs were examined and streptococci were present in 101. Only two of these were of the hemolytic variety, the rest being nonhemolytic. Fifty-four per cent. of the postpartum uteri examined contained streptococci. In a further series, in which particular care was taken to prevent vaginal contamination, twenty-eight per cent. were found to contain streptococci.

Mr. Leonard P. Lockhart described bacteriological examinations, in one hundred consecutive admissions to a lying in ward, of the cervix and vagina during pregnancy, with special reference to hemolytic streptococci. It is asserted that the series is of sufficient size to justify the following conclusions: 1. The presence before labor of streptococci in the genital passages of a pregnant woman is a potential source of danger. 2. This danger is increased if labor is abnormal. 3. All types of streptococci may cause pyrexia, especially the hemolytic variety. 4. Ward infection is not held to be the cause of the majority of hospital cases of puerperal pyrexia.

Dr. Bethel Solomons, gynecologist to Mercer's Hospital, Dublin, gave the results of a questionnaire on the subperitoneal Gilliam operation performed during the past six years by Dr. Solomons. The chief reasons for the production of this paper were 1, the divergent views held with regard to the treatment of backward displacement; 2, to show that there are many symptoms dependent on the displacement; 3, to find out if these symptoms are relieved by the operation; 4, to obtain knowledge as to pregnancy after the operation, and especially if there was difficulty in labor; 5, to find by examination if the uterus remained in the suspended position, and if there were any untoward symptoms following the operation.

The operative measures employed by Professor W. W. Chipman, of Montreal, for prolapsus uteri were described by him. The operation employed in Montreal consists in the exposure of the fascial cleft, the replacement of the viscera, and the radical cure of the hernia. Professor Chipman believes that as well as being a simple operation it is anatomically sound, and in Montreal during the past ten years has given satisfactory results.

Dr. Wilfrid Shaw read a paper on the relationship between ovulation, corpus luteum formation and menstruation. In the course of his investigation of this subject, the endometrium and ovaries of women who were menstruating regularly were examined. The date of occurrence of the earliest premenstrual changes was found. The ovaries were examined for early corpora lutea and the date when ovulation occurred was deduced from this investigation. The structure of the corpus luteum was examined and the changes taking place during menstruation and pregnancy were followed. It was shown that a relationship existed between the maturity of the corpus luteum and the development of the premenstrual changes. Degeneration of the corpus luteum was found to occur during menstruation.

Mr. Malcolm Donaldson read a paper on the treatment of inoperable carcinoma of the cervix with radium. The paper dealt with the technic employed in treating carcinoma of the cervix with radium, including methods of application per vaginam and per abdomen. The results published from various centres were quoted. The main part of the paper was devoted to clinical observations on eighty-five inoperable cases treated with radium. In addition to this, there are conclusions based on the histological sections obtained from hysterectomies performed subsequently to irradiation of the cervix. The conclusions came to were as follows:

1. In the vast majority of cases—eighty-five per cent.—hemorrhage disappears entirely within a few weeks, and if it returns at all, does so a short time before death. 2. In sixty-three per cent. of cases ulceration cleared up entirely, either temporarily or permanently. 3. Of those cases in which cauliflowerlike growth was present, in seventy per cent. it disappeared entirely. 4. The duration of life is prolonged in a certain number of patients. 5. The general condition of the patient in the majority of cases is much improved, and in numerous cases they were able to do their work in comfort for many months.

Dr. Gilbert I. Strachan, of Cardiff, read a paper on the treatment of carcinoma of the cervix by radium. In this paper he stated that about forty cases of carcinoma of the cervix had been treated and the clinical and histological results observed. The technic of radium application was described and the contraindications noted together with the points to be observed during the application. Clinically the conditions of the patients at the time of radiation and when last examined were stated, together with those who were known to have died or had failed to report. The histological changes in the carcinoma were described and general conclusions drawn regarding the efficacy of radium treatment in this condition.

Dr. A. Louise McIlroy and Dr. G. Pillman Williams contributed a paper on the toxemias of pregnancy from their clinical and chemical aspects. Dr. McIlroy read the paper. It described clinical and chemical methods of examination, the chemical examination of the blood and urine in normal pregnancy, toxemias without albuminuria, vomiting, headaches, antepartum hemorrhage, edema and abortion, albuminuriæ, nephritis, cystitis and pyelitis, other albuminurias, clinical significance of symptoms and signs of toxemia, chemical significance of examination of blood and urine in toxemia, results of toxemia upon the ovum and fetus.

Dr. John H. Teacher, of Glasgow, gave a lecture with lantern demonstration on the implantation of the human ovum. The principal points dealt with were: 1, The close of the decidua capsulans and the nature of the closing mechanism; 2, the relations between the maternal bloodvessels and the ovum in the earliest known stages; 3, theoretical considerations related to the nutrition of the ovum prior to implantation and the process of implantation.

Papers of great medical and scientific interest were read by Professor Whitridge Williams, of the medical department of Johns Hopkins University, and others.

Book Reviews

SURGERY

Chirurgische Operationslehre für Studierende und Arzte. Von Prof. Dr. Friedrich Pels Leusden. Vierte, wesentlich verbesserte Auflage. Mit 771 Abbildungen. Berlin and Wien: Urban & Schwarzenberg, 1925. Pp. xvi-832.

In this the fourth edition the plan of the previous editions has been followed and numerous additions have been made. Although the book is intended for the use of students and practitioners, it is most suitable for students, both as regards the subject material and the style of presentation.

The chapter on antiseptics and asepsis is excellent. The section on anesthesia leaves much to be desired. The subject of rectal anesthesia is omitted entirely. Local anesthesia is well presented but little mention is made of regional anesthesia which promises to become an important branch of anesthesia. Chloroform seems to be looked upon with much more favor in Germany than in this country.

The subjects of the cutting and reuniting of tissues, vascular surgery, and operations on the extremities, the head, neck, thorax, and the abdomen, and finally, the chapter on the urinary and sexual organs are presented in a didactic manner. Only one type of operation is generally described for each procedure, but this after all is probably the best way to teach students. In bone surgery, the motor drill is not mentioned, the author still preferring hand driven instruments. Tonsillectomy seems to be preferred by the author to tonsillectomy and only the old Matthieu tonsillotome is described. The former is the routine operation recommended. Of prostatectomies, only the Freyer method is described.

Numerous other examples of such onesidedness might be mentioned. The book has an air of extreme conservatism. As far as it goes it might do for German medical students, but the American would certainly not be satisfied with it. The illustrations are numerous but are of the old style of schematic drawings mostly. We are accustomed to more pretentious illustrations and photographs.

VITAL CAPACITY OF LUNGS

The Vital Capacity of the Lungs. A Handbook for Clinicians and Others Interested in the Examination of the Heart and Lungs Both in Health and Disease. By J. A. Myers, M.S., Ph.D., M.D. With an Introduction by S. Marx White, M.D., F.A.C.P. Baltimore: The Williams and Wilkins Company, 1925. Pp. 140.

Although Hutchinson, in 1846, established the technic and all the important physiological data of the vital capacity of the lungs, the subject received little attention until the last ten years, during which time a voluminous literature on this topic has appeared. In this small monograph Dr. Myers, who has devoted considerable study to this subject, has ably and succinctly summarized all the important old and modern contributions, and has emphasized the chief facts resulting therefrom. In separate chapters he discusses the physiological variations of the vital capacity, the influence of disease upon the vital capacity, the limitations and uses of the test and matters of technic. Simple tables enabling one to calculate the variation from the normal as correlated with height, weight and surface area are included. A bibliography of over two hundred references adds greatly to the value of the book. There are more typographical errors than seem justified for so small a volume. On page 28 there is incorrect reference to Table 6, Chapter VI; on page 66 one reads "statis" for stasis, and on page 86 the last line is completely misplaced.

Many will doubt the practical utility and necessity of repeated tests of vital capacity in the diagnosis and treatment of pneumonia as recommended by Dr. Myers, as well as the statement—"The time is at hand when all persons should know their actual vital lung capacities, just as they should know their actual heights and weights." The cases which Dr. Myers cites as illustrative of the value of the vital capacity test in preventive medicine are hardly conclusive, for in every instance the diagnosis of disease was made before the reduction in vital capacity was discovered. This enthusiasm of the author, of course, does not detract from the value of the vital capacity test, chiefly as a functional test for the sufficiency of the circulation.

GONADAL SECRETIONS

The Internal Secretions of the Sex Glands. The Problem of the Puberty Gland. By Alexander Lipschütz, M.D. With a preface by F. H. A. Marshall, F.R.S. Cambridge: W. Heffer & Sons, Ltd. Baltimore: Williams & Wilkens Co., 1925. Pp. 503.

Lipschütz's book is not a translation of his original publication in 1919, *Die Pubertaetsdruese und ihre Wirkungen,* but he has entirely rewritten the work in English, with the result that he has created the most complete and thorough exposition that exists regarding this subject. Hardly any question is left unanswered that a physician, a biologist, a psychologist or even a layman may ask in connection with the functions of the sex glands. Lipschütz is cautious in all his conclusions. He sharply differentiates between ascertained facts and between attractive, though unproved theories. This differentiation is especially emphasized in regard to the results of castration.

Lipschütz has not only studied and recorded the work of others in his book but also reports at length the numerous and valuable experiments which he, himself, and his coworkers have carried out. The function of the sex glands have been studied by attempting to overcome the consequences of castration. For this purpose, transplantation, as well as feeding and injections of gland extracts, were employed and the result noted. A chapter is devoted to the study of the connection between the internal secretion of the sex glands and the nervous system. The question of the seat of production of the internal secretion of the testicle is decided for mammals as follows:

a. The interstitial cells are the necessary part of the endocrine apparatus of the testicle.

b. No proof exists of a direct hormonic action by the cells of Sertoli or by other constituents of the wall of the tubules independently of the interstitial cells.

Less definite conclusions are reached as far as the

seat of production of the internal secretion of the ovary is concerned. Lipschütz says, "It is highly probable that the internal secretion of the ovary of the mammal is elaborated partly by the cells of the membrana granulosa and partly by cells of the theca interna. It is difficult to decide whether the increased internal secretion of the ovary is caused by a proliferation or only by an activation of the endocrine cells."

Chapters are devoted to the study of the specific sex action of the testicular and ovarian hormones, to the question of the isolation of the active principles, to the importance of the seminal vesicles and the prostate gland and to intersexuality, in which chapter hermaphroditism, homosexuality, etc., are thoroughly discussed.

The last chapters deal with eunuchoidism, sexual hormones and morphogenesis and the problem of rejuvenation. The book is richly illustrated and contains a most complete bibliography. The author should be congratulated to this splendid achievement.

SURGICAL CLINICS

The Surgical Clinics of North America (Mayo Clinic Number, June, 1925). With 115 Illustrations. Philadelphia and London by W. B. Saunders Company. 260 pages.

Twenty-eight members of the Mayo Clinic contribute the twenty-three clinics which constitute this interesting volume. W. J. Mayo contributes the first clinic on filtration phenomena in Relation to Clinical Medicine, a most interesting and instructive study, and C. H. Mayo follows with a brief article on Ulcer of the Stomach and Duodenum. Judd, Parker and Morse discuss urinary and prostatic calculi rather extensively, and point out the important but little known fact that severe pain is the predominating complaint in these conditions in only about 30 per cent. of cases. Cases are cited in which nothing more than a dull ache, often spoken of as "backache," was the only symptom recognized by the patient. Empyema is fully treated in a clinic by Harrington and Plankers.

The illustrations and the typography in general are of the high order which always characterize this series of useful publications.

DIABETES

Diabetes; Its Treatment by Insulin and Diet. A Handbook for the Patient. By Orlando H. Petty, A.M., M.D., F.A.C.P., and William H. Stoner, A.M., M.D., F.A.C.P. With Illustrations and Tables. Philadelphia: F. A. Davis Company, 1925. Pp. 133.

Here is another good handbook for the patient suffering from diabetes. The author emphasizes that it is not intended as a substitute for the physician, but as a valuable aid to the patient in that it explains fully the meaning of diabetes and how the diabetic patient may keep himself in the greatest efficiency.

This second edition includes many new sections, notably those dealing with the early diagnosis, the prevention and the treatment of complications of diabetes. Several minor numerical errors of the first edition have been corrected. More complete normal weight tables and index have been introduced and the salt free diet in the treatment of hypertension is discussed more fully. The following subjects are taken up: The inorganic salts and vitamines in foods, the manner of weighing and measuring foods, the methods of estimating diets, uranalysis (glucose), insulin and the technic of its administration in the home, and diabetic hygiene. A number of recipes are given and also tables of the protein, fat and carbohydrate content of the commonly used foods.

In a foreword, John B. Deaver urges closer cooperation between the internist and surgeon in the handling of surgical conditions in diabetics.

THE DIGESTIVE MECHANISM

Handbuch der Biochemie des Menschen und der Tiere. Herausgegeben von Prof. Dr. Carl Oppenheimer. Zweite Auflage: Leiferung 16, Band V. (S. 1-160), Bog. 1-10; Lieferung 17, Band IV (S. 353-544), Bog. 23-24. Jena: Gustav Fischer, 1924.

These sections of Oppenheimer's *Handbuch* are devoted to digestion and the conditions of resorption of the products of such action in both the lower animals and the vertebrates. The chemistry of the nervous system, of the eye, of tumors, salivary glands, and the gastric juice is also considered. As usual, the articles are complete and quite satisfactory from the point of view of a reference book. The different writers are not always critical in the material which they select for inclusion, but leave much to the reader's discretion.

BACTERIA AND CANCER

Le Bactériophage de d'Hérelle. Par Docteur Paul Hauduroy. Préface du Professeur Fernand Bezançon. Paris: E. François, 1925. Pp. 212.

This small monograph on the bacteriophage supplements d'Hérelle's book published several years ago. It furnishes an admirable résumé of this little known subject, now so interesting because of the possible connections between these minute parasites and the etiology of cancer. Levaditi and others have been working on this phase of the question, and the recent newspaper announcements from England of the investigations of Gye on the same subject show that there is some possibility that ultimately we shall know much more than we do at present of some of the obscure diseases, including cancer. The author is careful to point out, however, that the amount we do know is extremely small, and that the greatest care must be used in drawing conclusions concerning the pathogenicity of an organism which cannot be seen when it is cultivated, and is purely a parasite of tissue cells. Assumptions are dangerous, and the writer himself gives an admirable example of scientific restraint in the expression of his opinions.

EAR, NOSE AND THROAT

Diseases of the Ear, Nose and Throat. By Harold Hays, M.A., M.D., F.A.C.S. Illustrated with 495 halftone and line engravings in the text, and 55 full page plates, nearly all in color. Philadelphia: F. A. Davis and Co., 1925.

We are fully aware of the difficulties that beset the specialist who attempts to popularize his subject for the benefit of the general practitioner: it requires delicate discrimination to place before the latter only what is essential and of practical service in his everyday work, thus avoiding the pitfalls of cumbersome theorizing and frequently the not quite honest padding. Few authors succeed in overcoming these difficulties, and while the present one has not fully conquered them he has nevertheless succeeded in

presenting to the profession a work of distinct interest both to the general practitioner and to the specialist.

In the section on the ear we call the reader's attention to the chapter on progressive deafness (a subject to which the author has devoted considerable time and energy in a medicosocial way) which is most illuminating and important, the more so as the majority of the textbooks either skim over the subject in a perfunctory manner, or neglect it altogether. The same, with some reservation, may be said of the chapters on diseases of the external ear and of acute and chronic otitis media. But it is questionable whether "the average medical man who desires to round out his learning and perhaps do something along the lines of treatment" (from the author's preface) will profit much by a painstaking description of the mastoid operation, or a detailed account of the examination of the internal ear, this latter procedure being beyond the thorough grasp of even many a professed specialist.

The subject of diseases of the nose and throat is brought up to date and gone into quite thoroughly, every operative procedure of any importance being fully presented in a way to be grasped by the general practitioner, and at the same time presenting sufficient interest to the practising laryngologist. It might be advisable, however, to devote more space to the larynx, and especially to tuberculous laryngitis, a subject of considerable importance to the general practitioner into whose hands the patient often comes long before he reaches the specialist.

PHYSIOTHERAPY

Lectures, Clinics and Discussions on Electrophysiotherapy. Physiotherapeutic Lectures, Second Edition. Chicago: H. G. Fischer Company, 1925. Pp. 740.

This book represents lectures and clinics given by two dozen contributors during a five day convention held under the auspices of physiotherapeutic manufacturers.

As always in the expression of many individual viewpoints in condensed form the different aspects of a vast and as yet unstandardized field, including both subject and technic, many statements must be recognized as representing only the personal opinion of their author.

On the other hand, there are many valuable suggestions and more or less detailed descriptions of technic in many phases of physiotherapy and though the different aspects of the subject are widely scattered through the book it conveys in all a rather gratifying attempt at meeting the generally accepted technic.

For the amateur the dangers of misguidance are considerable. For one who has practical knowledge of the basis for physiotherapy and is so able to differentiate and assimilate intelligently, but having limited experience, the book ranks above the average of physiotherapeutic compilations.

The ground is fairly well summarized, though necessarily fragmentarily and partially, and deals with many of the electrotherapeutic modalities. However, some of the most useful even of these are not referred to.

Authors of rank outline numerous practical features and some excellent points are brought out. Many of these are expressive of the writer's personal experiences rather than being a repetition of theories. Many named diseases and diagnostic points are discussed to advantage and mostly from a clinical point of view. Considerable rationale for treatment is included.

Physiotherapy in relation to all of medicine and to its industrial economics is outlined. The factors most strongly set forth are surgical and medical diathermy and the actinic rays. Under the latter some pertinent points are cited which guide or influence the therapist in the current technic.

A rather comprehensive survey is given of high potential x ray deep therapy which outlines the present day viewpoint. This article follows the rule of the day in being optimistic to an unwarranted degree. It gives no hint at abatement of the extravagant outlook for massive doses.

The book has many excellent features. In some respects it further tends to decrease the unwritten void in the relation of physiotherapy to medicine as a whole. For the physiotherapist already fairly well grounded the book should find a welcome reception.

Medicoliterary Notes.

The name of the Massachusetts School for the Feebleminded has recently been changed to the Walter E. Fernald State School, as a tribute of the late Dr. Walter E. Fernald, who was its superintendent for nearly forty years.

* * *

The July issue of the *American Journal of Public Health* contains a series of articles on periodical health examinations. These are A Survey of the Present Status of the Periodical Health Examination, by Dr. Alec N. Thompson; The American Medical Association and Periodical Health Examinations, by Dr. John M. Dodson; Health Examinations Past and Present and Their Promotion in Pennsylvania, by Dr. Elliott B. Edie; and The Place of Health Examinations in the Practice of Medicine, by Dr. Alec N. Thompson.

* * *

Bubonic plague was first recorded as occurring in A. D. 542 in Pelusium, Egypt, having spread by trade routes over the then known world, until, at its height, the mortality was from five thousand to ten thousand persons a day.—*Dearborn Independent.*

* * *

Apparently one of the results of the Scopes trial has been the organization—or possibly only an instigation toward the organization—of a new society to be known as the Science League of America. This is announced as a nonsectarion, nonpolitical association formed to protect scientific freedom, to combat the attacks of "fundamentalists," and to foster opportunities for scientific work of all kinds. California is the birthplace of the new organization.

* * *

The socalled Galilee skull, recently discovered at the Sea of Galilee, is, according to Sir Arthur Keith, one of a people who lived in Palestine twenty thousand years or more before Abraham and his household. On this evidence, he considers Europe and not Asia the cradle of the human race.

* * *

If innovations and legal enactments can make a civilization, the new Turkey is certainly highly civilized, so that there need be no surprise at the information from Constantinople that the government is encouraging the use of surnames. At present only a few hundred Turkish families have surnames, but those who are without are now permitted to choose for themselves, provided they do not infringe on the family copyright of some famous person. Now that the surname has arrived in Turkey, it is obviously going to be treated with considerable respect, for apparently it has to be placed before all other names, which is the system adopted by directories and other businesslike and severely secular compilations. But in this matter the Turks are still lagging behind a near neighbor, for it is not long since we were assured that Soviet Russia had become so extremely

methodical that nothing except surnames were to be allowed and that the individual bearers of them were to be distinguished by numbers, like full privates in the British army. If that scheme was ever seriously proposed at Moscow it seems to have been dropped—perhaps the Amalgamated Union of Operative Russian Novelists protested on the ground that their works would lack all authentic atmosphere if they were not allowed to call the same character by three or four different names inside the same chapter.—*Manchester Guardian Weekly.*

* * *

The issue for July 3d of *Public Health Reports* contains a very complete and useful chronology of the development of Federal health legislation and public health and medical activities, compiled by James A. Tobey of the Institute for Government Research, Washington.

* * *

A presidential decree in Mexico has recently provided for the establishment of a Federal Bureau of Child Welfare with local branches throughout the country. This bureau, which will be subsidiary to the Bureau of Education, will be interested in all children, regardless of race or social status. Its activities will be concerned chiefly with the compilation of all laws on child welfare, the drafting of new laws for the protection of children, and the establishment and supervision of child welfare institutions.

* * *

The cornerstone of the Potts Memorial Hospital, one of the first institutions in this country to be devoted to industrial rehabilitation of the tuberculous as well as to their care and treatment, was laid on June 26th at Livingston, New York. The institution will be constructed upon an estate comprising seventy-six acres, and which has already farm buildings, live stock, and a large grove and gardens. It is hoped that it will be ready for occupancy by April of next year.

* * *

Barnacles on bottoms of vessels collect only on surfaces painted blue and black, according to a discovery recently announced by the U. S. Bureau of Fisheries. White, yellow and green plates are practically free from them.

* * *

Articles of special interest in the August number of the *American Journal of Public Health* are The Part of State Health Departments in School Hygiene Programs, by Dr. Eugene R. Kelley, and The Rôle of the State in Industrial Hygiene, by Dr. Emery R. Hayhurst.

* * *

The American Pharmaceutical Association has recently announced that medicine gardens as adjuncts of schools of pharmacy are to be fostered by it, as a means of supplying to classes in botany and microscopy proper materials for study.

* * *

A new, nonasphyxiating illuminating gas is being promoted, according to statements recently made to the press by the Bureau of Standards. This gas is made either from oil or from refinery residuum of oil refineries, and is nonasphyxiating because it is manufactured at a temperature much lower than the temperature which is necessary for the production of carbon monoxide and carbon dioxide. It is composed largely of hydrogen and carbon combinations.

* * *

The number of suicides has of late increased so rapidly in Germany that an Antisuicide Bureau has recently been established in Berlin to help men and women to find "another way out." It is reported that already more than eight hundred persons, more than half of them men, have called at the bureau for help and advice. According to German official records, in 1921 there were 12,764 suicides among men and women in the country. This amounted to 20.7 per 100,000 of the population, a rate equalled by no other country in the world.

* * *

Recent publications of interest to the medical profession are *The Neuroses of the Nations,* by C. E. Playne (London; Allen & Unwin); *A Theoretical Basis of Human Behavior,* by Albert Paul Weiss (Adams & Co.); *Almost Human,* by Robert M. Yerkes (Century); *Problems of Personality,* edited by Dr. C. Macfie Campbell and others (Harcourt); *The Medical Follies,* by Dr. Morris Fishbein (Boni); *New Cancer Facts,* by David Master, largely an account of Dr. Louis Sambon's work on cancer (Dodd); *The Psychology of the Poet Shelley,* by Edward Carpenter and George Barnefield (Dutton); *Mental Hygiene with Special Reference to the Migration of People,* by Walter L. Treadway (Government Printing Office); and *Color Blindness,* by Marie Collins, giving the results of an investigation of color blindness made in the George Combe Psychological Laboratory, Edinburgh (Harcourt).

* * *

Americanitis; Blood Pressure and Nerves, is the title of a new book by Dr. William S. Sadler (Macmillan); the jacket characterizes it as a work sounding a note of warning in "this constant whirlwind of haste which characterizes the American people, leaving in its path countless victims of blood pressure."

* * *

The name of the St. Andrews Institute for Clinical Research has been changed to the James Mackenzie Institute for Clinical Research. An endowment of $300,000 is being raised to perpetuate the institute's work as a memorial to its founder, Sir James Mackenzie.

* * *

The already widespread and growing interest in psychiatric problems was evinced by the large number of representative institutions in the country that included courses on this and related subjects in their summer school curricula. Among these were Smith College, the State School at Rome, N. Y.; the Syracuse State School, the Pennsylvania School for Social and Health Work, the University of Minnesota, Columbia University, Simmons College, Boston; the University of California, the New York School of Social Work, the Graduate School of Social Service Administration at the University of Chicago, Teachers College of Miami University, and others.

* * *

Articles of interest in recent publications are: Placement Work for the Tuberculous, by Alice Campbell Klein; Preventive Medicine in Industry, by Dr. Frank L. Rector; Cafeteria Etiquette, by Jean Broadhurst; and Housing in the United States, from an article by John M. Gries, Journal of Land and Public Utility Economics, all in the May issue of the *Nation's Health;* Cancer and the Black Man, by Dr. J. Ellis Barker, *Fortnightly Review* for March; Ernest Harold Baynes, by Frederic A. Lucas, *Natural History,* March-April; Give Human Nature a Chance, by Chauncey M. Depew, *Collier's,* April 18; Asia's Struggle Against Opium, by H. G. Alexander, *Contemporary Review,* April; The Renaissance of Alchemy, *Independent,* April 11; Pitfalls in Tourist Camp Sanitation, by Dr. Oscar Dowling, *Dearborn Independent,* March 21; Under the Doctor's Constant Care, by Dr. Charles Gilmore Kerley, *Modern Priscilla,* May; The Neo-Malthusian, *Nation,* April 15; Instinct as a Guide to Food, by Benjamin Harrow and Casinivi Funk, *American Mercury,* April; in the same magazine, Heart Disease, by Dr. James A. Tobey; On Not Sleeping a Wink, *Atlantic,* April; and Race Suicide—No Murder, by J. Langdon-Davies, *New Republic,* April 15.

* * *

Dr. W. E. Gye, who, with Mr. J. E. Barnard, has made a very important cancer discovery, is only forty years of age. He is a Derbyshire man, and began life, I believe, in commercial work. His name originally was Bulloch, and he afterwards changed it to Gye. In early life he received a bequest which enabled him to qualify at Edinburgh University. While at Edinburgh he came under the influence of Dr. Russell and became interested in cancer research, and worked in this field until the outbreak of the war, when he joined the forces and served as a doctor. After the war he took up cancer investigation again, and worked with Dr. Murray, the well known worker in cancer research. Later Dr. Gye became one of the investigators working under the Medical Research Council, and the work of the past two years which has resulted in this discovery has all been done under the control of the Council. Dr. Gye is described by his friends as a retiring man, absorbed in his scientific work and reluctant to talk about it. The fact that his inquiries were leading him to a highly important new piece of knowledge has been known to him for some time, but his dislike of premature discussion has prompted him to say very little about it, and to withhold information until the discovery was sufficiently confirmed by exhaustive testing and experiment.—*Manchester Guardian Weekly.*

Abstracts from Current Literature

SURGERY

Surgical Treatment of Duodenal Ulcer.—Charles A. Pannett (*Lancet,* March 14, 1925) asserts that there can be no reasonable doubt that in the evolution of the treatment of duodenal ulceration surgery is only a temporary expedient, but neither can it be denied that, in the present state of knowledge, operative treatment is able to confer upon the sufferer that relief which medicine is unable to bestow Gastrojejunostomy is a method which effects a cure in about seventy per cent. of cases reported by the author. These results do not show the operation in as favorable light as revealed by other statistics in England and America, based on very large series, but they agree with those reported from European clinics. The direct method of attack, as in the analogous gastric lesion, is likely to prove more effective in treatment if it can be carried out free from serious risk to the patient. In the cases of duodenectomy reported by the author results have been satisfactory, but the later clinical history of these patients remains for further study. This limited experience is favorable enough to justify a continued trial of duodenectomy in the treatment of duodenal ulcer.

Surgical Treatment of Gastroduodenal Ulceration.—Charles A. Pannett (*British Medical Journal,* March 14, 1925) draws the following conclusions regarding the surgical treatment of gastroduodenal ulcerations:

1. The primary treatment of gastric and duodenal ulceration is always medical.
2. Surgery is indicated when medical treatment has failed, or in recent cases when a large ulcer is demonstrable by x rays.
3. It is probably true to say that medical measures can be continued with advantage longer in duodenal than in gastric ulceration.
4. For ulcer of the lesser curvature away from the pylorus, sleeve resection is the operation of choice.
5. For ulcers of the lesser curvature close to the pylorus or ulcers at the pylorus, excision of the affected portion of the stomach, including the sphincter, followed by axial union, is the best.
6. For cicatrized pylorus following healed ulcer, pylorectomy is preferable, but gastrojejunostomy gives very good results.
7. For ulcer of the duodenum it is not decided yet whether resection of the duodenum with its attending increased risks gives results so much better than gastrojejunostomy that it should replace the shortcircuiting operation.

Surgical Treatment of Chronic Ulcerative Colitis.—Thomas Carey Evans (*British Medical Journal,* January 31, 1925) states that cases of colitis persisting over two or three months without intermission and with profound emaciation and anemia which do not respond to medical treatment should be handed over to the surgeon. When they reach this stage they are invariably examples of mixed infection, whatever the organism that caused the primary infection may have been. In severe cases the large intestine may be likened to an abscess or bag of pus. In all chronic cases a sigmoidoscopic examination should be made.

The only rational treatment, when the diagnosis is confirmed, is frequent irrigation of the large intestine, either through an appendicostomy or a valvular cecostomy, with eusol solution until the washings are clean; after that, with large quantities of warm saline for prolonged periods. Valvular cecostomy is particularly mentioned, as the closing of an ordinary cecostomy may be difficult later, besides being unpleasant for the patient and for those associated with him.

Femoral Hernia: Operative Treatment by Roux's Method.—In the fifty-two cases of Frank Harvey (*Lancet,* December 13, 1924), twenty-eight were in males and twenty-four in females. The youngest patient was a girl aged five and the oldest a woman aged seventy-two. Forty-six patients were traced and replied that the hernia did not recur and that pain was not complained of.

Roux's operation is a very simple one and is quickly performed. An incision is made parallel to the inner half of Poupart's ligament and along its lower border. The lower part of the incision is retracted so that the femoral canal is exposed. Omentum is often present and will usually be found to be adherent. All adhesions are freed, and it is frequently necessary to ligate and remove redundant omentum before returning it to the peritoneal cavity. Bowel, if present, is carefully examined where it has been in contact with the neck of the sac before it is returned into the abdominal caviety. The sac is pulled down with moderate tension, twisted to obliterate its lumen, and ligated high up, the redundant portion being excised. A rectangular staple, which is made in various sizes, is now taken, and its points passed through the inner portion of Poupart's ligament. The inner limb of the staple passes just internal to the crescent border of Gimbernat's ligament and the outer limb immediately internal to the common femoral vein. The staple is pressed firmly into the horizontal ramus of the pubic bone. Roux's punch is now placed on the staple, which is gently hammered into the bone until the crural ring is obliterated. Care must be taken not to drive the staple in too tightly, or Poupart's ligament will be torn. The external wound is then closed with silkworm sutures.

Studies in Biliary Tract Surgery.—J. H. Baldwin and W. R. Gilmour (*Annals of Surgery,* November, 1924) report as follows on their findings:

1. Cholecystitis may have its origin in vague beginnings in early life, but is clearly recognized and routinely treated in or past middle life. The average duration of clear cut symptoms was slightly over two years, while the average age of the patient in our series of one hundred and thirty consecutive cases was forty-four years.
2. Widespread, definite and troublesome adhesions with bands from gallbladder to duodenum and transverse colon were the most uniform finding in all types of cases.
3. Seventy-five cases were treated by cholecystectomy, with four deaths encountered from this series.
4. Forty-one cases were treated by drainage methods, with four deaths. Deaths in both series were due to cardiorenal failure or peritonitis in complicated stone cases.
5. The mortality percentage was 6.16 per cent.
6. In the followup data, the cholecystectomy cases were freer from symptoms and maintained their regained health more constantly.

Evidences of Regeneration in the Injured Elbow.—On the basis of five cases, Ernst Baumann (*Schweizerische medizinische Wochenschrift,* November 13, 1924) shows that after a fracture and a subsequent operation, the removed lateral condyle of the humerus regularly reforms by a true regeneration. As a result of the proportionate cooperative effect of osseous and articular regeneration there result relatively complicated regenerations, such as have been described in human pathology. The function of the five elbows was either absolutely perfect or injured to a slight extent, hardly worthy of practical consideration. Early articular function (functional stimulation) is given much credit for the regenerative process. Special emphasis is laid upon the fact that in the juvenile elbow the lateral condyle is regenerated from the metaphysis after the removal of the specific zone of growth.

If in one of the forms of fracture of the juvenile elbow the injured side is compared with the uninjured side, the former shows a considerable developmental outgrowth of the skeleton roentgenologically. Centres of ossification, which are still absent on the uninjured side, appear as large shadows at the site of the former injury. Centres of ossification present on both sides regularly appear larger upon the previously injured side. The union of the centres with each other and with the metaphysis shows corresponding differences. The posttraumatic acceleration of development first shows itself at a time when the posttraumatic vascular filling and the new formation of bloodvessels has undergone retrogression. It reaches its maximum probably after about two years, is somewhat retarded later on, but is still visible after years. The described acceleration of development is theoretically attributed to the universal property of living tissues of responding to injury (stimulation) with hypercompensation. Special emphasis is laid upon the position of adduction, which usually occurs in connection with well replaced and properly reduced supracondylar fractures in children.

Thoracoplastic Surgery in the Treatment of Pulmonary Tuberculosis.—William H. Thearle (*Colorado Medicine, March,* 1925), thus compares thoracoplasty with pneumothorax. Thoracoplasty presents the same general contraindications as any major surgical procedure—special contraindications are tuberculosis of intestines, miliary tuberculosis, organic nephritis, amyloidosis and no attempts at artificial pneumothorax.

Pneumothorax compared with thoracoplasty is a relatively safe procedure, free from shock and deformity; compression is gradually induced, which reduces to a minimum the dangers of aspiration as well as circulatory and respiratory disturbances. Pneumothorax possesses the great advantage that the lung can be released to some degree at least if trouble develops in the better lung.

The advantages of the immediate and permanent collapse of thoracoplasty are:

1. It obviates the long period of medical surveillance (three to five years, Gravensen) with its frequent refills necessary in pneumothorax therapy, which is associated with serious pleural effusions of variable degree in about fifty per cent. of cases (Alexander), purulent exudates in five per cent. to twelve per cent. (McKinnie, Matson), and spontaneous pneumothorax in 3.3 per cent. (Matson).

2. It produces a definite result in the poorer class, most of whom, Fishberg says, abandon pneumothorax refills prematurely, soon after discharge from sanitaria.

3. Lastly is the not uncommon danger of reactivation in an expanded lung after completion of a long period of pneumothorax therapy. It is often impossible to definitely predict when tuberculosis is permanently healed, even with negative clinical symptoms, and Alexander quite aptly expresses the cessation of pneumothorax compression as frequently "a jump in the dark."

Surgery of the Hand.—S. Bunnell (*Surgery, Gynecology and Obstetrics,* September 1924) gives in detail the various reconstructive methods and steps in surgery for the hand, accompanying them with cases. Following are the main principles he advises:

The wrist and fingers must first be put into functionating positions. That is, the wrist should be cocked up in extension and the fingers should be partially flexed and especially in their proximal joints. The thumb should oppose the fingers. A hand with a straight wrist, with extended proximal finger joints, and with the thumb at the side of the hand, is practically useless.

After trauma, infection, or operation the tissues are usually densely indurated. A second operation on such tissues will result in the summation of scar tissue and so had best be delayed a few months. The final result is not obtained until after the softening up process has taken place. This often takes a year. For most reconstruction, special splints must be used. These the surgeon himself should make to fit the case. They are usually made of metal. They should be boiled for application at the end of the operation. It is most important for later reference to make a complete record of a case before the repair is attempted. This should consist of photographs showing limits of motion, measurements of joint motion, condition of the bones, joints and tendons, amount of loss of nerve function, both motor and sensory, presence of contractures, degree of induration of tissues, and finally the strength and practical function of the hand.

Chiropodic Surgery.—G. B. Arana (*Surgery Gynecology and Obstetrics,* May, 1924) describes a technic for subungual hematoma which consists of double trephination and the making of a subungual passage through which anesthetics and antiseptics are caused to flow to empty and decolorize the hematoma. He recommends anesthetic before starting the operation only in the case of timid patients, as once the nail is perforated the subsequent proceedings do not cause pain. In draining, the stiletto must always be inserted between the under surface of the nail and the hematoma. If this is done pain is absolutely avoided. The author's cosmetic obduration technic follows:

When the hematoma has been extirpated in the manner described, the cavity must be well dried, and, for greater security, washed with serum, then with high proof alcohol, and lastly, dried with an air syringe as used in dentistry. The alcohol which may remain is evaporated, and the air vapor, contained in the cavity, dried. Dry and warm air is taken up from the flame by the proper syringe such as used by dentists, and expelled into the ungual cavity until the latter is apparently dry. Immediately thereafter the cavity is filled with the paste already prepared, which, to be efficaciously applied, must possess certain properties. As a matter of fact, it must be semifluid so as to enter into all the tiny spaces surrounding the cavity. It must be of a rosy tinge deeper than that which is normal to the nail, for through them the color is modified. It must solidify in a short time so that the filling may persist, and its temperature must not exceed that of the ungual body when applied.

After several tests, the author endorses the use of dressing seal or rose colored putty. As it dissolves in chloroform, we make a paste more or less fluid, at will, according to the quantity of solvent used. The cavity is filled by means of a common syringe which takes up the semifluid paste and drives it into the cavity through one of the orifices trephined in the nail. The other opening is left open so that the cement in entering the cavity expels the inside air.

The putty or cement must be pushed slowly in, until the air is wholly expelled; that is, until it comes out through the opposite ungual orifice. Then, closing the orifice with a tiny rubber piston and continuing to press in the paste, we raise the pressure within the cavity so that the paste will have to push into all the tiny free spaces.

Resection of Upper Maxillary.—E. E. Lauwers (*Surgery, Gynecology and Obstetrics,* October, 1924) offers a new technic for this operation. Its main objects are to avoid sectioning certain cutaneous muscles which affect the expression of the face and the play of the features, and to avoid leaving scars, the retraction of which often causes ectropion.

A vertical incision is made which splits the lower lip on the median line and descends to the mandibular symphysis, is continued along the lower edge of the maxillary to the angle of the jaw, then up along the posterior edge of the ascending branch to the lobe of the ear. The incision goes through the soft parts to the bone. The limits of the flap are marked and it is raised under the mandibular periosteum. The masseter is sectioned and great care is taken to maintain continuity with the periosteum. The lower gingivolabial cul-de-sac is entirely cut and the flap is thrown upward. The upper gingivolabial cul-de-sac is now cut from the curb of the lip to the retromolar space.

The anteroexternal surface of the maxillary is exposed and denuded close to the bone or under the periosteum according to the case. The infraorbital nerve is cut at the foramen. As the cutting proceeds the flap is raised higher forward and backward. A blunt retractor raises the entire contents of the orbit including the periosteum. Sharp instruments cut away the osteocartilaginous formation of the nose in front, and the molar bone at the back. The flap is then covered with compresses.

The remaining steps are absolutely identical to those which are described in the classical resection. The section of the maxillomolar attachment, the section of the ascending branches of the maxillary, the section of the palatal apophysis, and the severance of the pterygoid attachments present no particular difficulty.

Correction of Foot Arch.—J. T. Rugh (*Journal of Bone and Joint Surgery,* July 1924) recommends the soft tissue operation of fascia transplant, and says that the whole purpose of the transplant is the interruption of the continuity of tissues which are pathologic and which constantly tend to shorten as a result of the inherent changes arising from the underlying causative factors.

The technic is as follows: Beginning in front of the internal malleolus, a little higher or lower than the tibialis-posticus tendon (according to the height of the skin contraction), an incision is made transversely across the sole as far as necessary to free the skin shortening. The fascia is then cut and the flexor brevis and adductor hallucis are either overstretched or cut. If correction is not yet complete, the tibialis posticus and the flexor longus tendons are severed; the accessorius usually gives no truoble. If there still is resistance, a narrow bladed knife is slipped close under the astragalus, and the astragaloscaphoid ligament or any other underneath the foot arch is divided, and over correction is easily accomplished. Any bony deformity can also be dealt with after this time if it be found needful. The wound is packed firmly with gauze to check all bleeding and a plaster cast is applied to the foot to maintain it in over correction.

An opening is next cut in the inner and under side of the cast, of sufficient size to allow sewing of a graft in place. At a suitable height on the inner side of the calf of the

opposite leg, an elongated flap of skin, fat, and fascia is lifted, of sufficient width and length to easily cover the incision in the sole of the foot. The edges of the wound under the flap are drawn together by silkworm gut sutures and a pad of gauze is laid over the sutured incision. The sole of the involved foot is then approximated to the flap, the gauze packing is removed and the flap is sewn in place with silkworm gut, care being taken to secure accurate coaptation of skin edges. Copious dressings are applied all about the area and between the plaster cast and the calf of the leg, and an investing cast is applied to hold the two parts in firm position until union obtains. It is well to flex the knee of the host leg about and hold it so in plaster, as this position is more comfortable for the patient. After eighteen to twenty-one days, the cast is cut and the base of the flap separated from the leg and carefully folded into the outer end of the incision in the foot sole, which will have to be opened a little to receive it. This heals in a week, the cast being worn on the foot all the time, and the patient is then encouraged to begin walking. After another week, the cast can be removed and a proper shoe with a firm shank is fitted. The operation is simple and easy of performance and the results are good, if care is taken to entirely release the contracted soft parts and secure sufficient length and breadth of flap.

If the skin is not much shortened and the fascia and tendons are the main offenders, it is not necessary to transplant the skin flap, though the same principle of interposition of fat and fascia to interrupt the line of contraction is indicated and is accomplished as follows: A longitudinal incision is made in the sole of the foot, and the plantar fascia dissected out entirely, or in part, the tendons cut and thorough stretching done, and then a free fascial flap taken from the side of the thigh is transplanted into the sole of the foot in the place of the removed plantar fascia, and the incision closed. Plaster is then applied with as full correction as possible for a period of three to four weeks. Walking is begun in ten days or two weeks. This is followed up by massage and stretching for some time to insure thorough restoration of function in the sole of the foot, and a flatsoled shoe with firm shank will enable the foot to stretch from weightbearing and prevent buckling of the shoe from too great a muscle pull.

Correction of Burn Scar.—S. L. McCurdy (*Journal of Bone and Joint Surgery,* July 1924) describes the Z plastic method of operation for relieving deformity.

Split the burn scar from one end to the other at the crest. The two flaps thus made are dissected loose down deep into the tissues, even to the fascia over the muscles, where this is possible. The incision must be through the subdermal fat. Two incisions are now made from the two ends of this first incision, one to the right and the other to the left. The angle of these incisions to the first incision depends upon the part operated upon. The points of these two flaps are now dissected loose, always remembering to preserve the subdermal fat with the flap, if this is found. The joint is now extended and the flaps thus dissected loose very naturally drop into the denuded surface made by the extension of the extremity, or throwing backward of the head. It may be necessary to extend the lateral incisions farther out so as to permit the corners of the flap to drop back into the angles between the skin line. The corners of the flaps are now sutured in their new positions. It will be observed that the flaps cross each other in their adjustment to the new position.

Mechanism of Postoperative Hemorrhage.—A. O. Wilensky and S. S. Samuels (*Annals of Surgery,* November, 1924), finds strong evidence that infection is the most important single factor, if not the only factor, causing secondary hemorrhage in operative and other wounds. Their studies show that the presence of the drainage apparatus causes an apparently protective thickening of the wall of the vessel with which the drainage material is in close contact; that this thickening is due to a proliferation of connective tissue cells in the intima; that the infective process with resultant cell necrosis begins in the intima and spreads to the media; that a rupture occurs in the intima and media with the formation of an aneurysmal sac; and that the bleeding follows as a result of the rupture of the aneurysm. It seems, then, that in cases of secondary hemorrhage such as have been described, the important causative factors include an initial trauma of some kind, plus pressure of the tube or other drainage apparatus in an infected environment.

Resection of Twelfth Rib in Total Empyema.—C. Nather and A. Ochsner (*Surgery, Gynecology and Obstetrics,* July 1924) describes and explains his technic with the following conclusions:

1. Drainage of a pleural empyema at the anatomically most dependent portion is the method of choice. The physical and anatomical factors in drainage are more important than the physiological.
2. The position of the diaphragm in cases of empyema varies considerably before and after operation. Preoperatively it is impossible to determine what position the diaphragm will assume after the excavation of the exudate. Therefore it is safest always to drain at the most dependent portion of the pleural cavity.
3. The resection of the twelfth rib allows access to the pleural cavity at its anatomically most dependent portion.
4. A small pleural incision prevents the production of a large open pneumothorax. In those cases operated upon in the formative stage of the empyema before the mediastinum is fixed, there is no danger of a resulting mediastinal flutter.
5. By means of large, heavy, rubber drainage tubes with numerous lateral openings the pleural cavity can be completely drained independent of the position of the diaphragm.
6. Cases of empyema treated by resection of the twelfth rib have a shorter convalescence.
7. The formation of a chronic fistula is practically impossible because as soon as the infection has cleared up and the drainage tubes are removed the walls of the wound fall together. On the other hand partial resection of a rib produces a splinted wound the tendency of which is to remain open.
8. Total resection of a rib does away with the possibility of a resulting osteomyelitis of the rib and therefore one factor in the formation of a chronic empyema is eliminated.

Modification of Estlander's Operation.—E. D. Twyman (*Surgery, Gynecology and Obstetrics,* June, 1924), reports on the following modification to remedy in particular the defects of Estlander's operation, smallness of the mouth, or pouchiness of the upper lip and tension on the lower lip. The operation is performed under local anesthesia.

A triangle is outlined and cut from the upper lip at each corner of the mouth, its apex upward in the nasobuccal fold, its base downward and its lateral side prolonged downward and outward lower than the angle of the mouth. The nourishing pedicle left is attached to the lower lip, inner side. Additional room is had by a further incision extending outward in the line of the mouth. As the tension of the lower lip is released, the lower incision gaps open, a space is opened up into which the triangle of tissue from the upper lip naturally fits. Suture of the sides of the defect in the upper lip makes a natural looking line, the nasolabial for the mucosa is suitably sutured at the corners. Leaving the sustaining pedicle attached to the lower lip instead of the upper allows indefinite lateral extension of the os without endangering the nutrition of the triangle to be moved. Accurate measurement demonstrated in advance the gain that would be made.

Insulin in Diabetics Requiring Surgery.—Orlando H. Petty and William M. LeFevre (*Medical Clinics of North America,* November, 1924) propose the following emergency preparation for operations on diabetics: A catheterized specimen of urine is immediately examined for glucose and diacetic acid. If the specimen contains glucose and a definite diacetic acid reaction, procure a specimen of blood for glucose and carbon dioxide estimation, these analyses being done in the laboratory during operation, and then immediately administer ten or more units of insulin, depending upon the glycosuria and the urinary evidences of acidosis before operation.

Routine diabetic preparation should be instituted a day or two before. Acidosis and blood sugar estimations prior to first meal after admission are made, and if acidosis and hyperglycemia are present, administer insulin in proper amounts, estimating insulin effect by blood chemistry within three hours. If the case is a severe one, repeat blood chemistry during the night and administer additional insulin if indicated. Give enemas. Diabetics should not be purged. If not a gastric case, permit patient to take carbohydrates in liquid form and drink water up to one hour prior to operation. Insulin in proper doses immediately before operation if glycosuria or hyperglycemia are present. There is no ideal anesthetic for diabetics. If spinal or local anesthesia

can be used these should have preference, then nitrous oxide-oxygen, ether, and lastly chloroform. Liquids immediately after operation, either by proctoclysis, hypodermoclysis, or intravenously, according to the chemical severity of the case. Patient should receive 1000 c.c. of liquids every six hours. Subsequent insulin dosage is regulated by the chemical data of the patient, and if this shows marked change from normal prior to operation, give twenty units of insulin immediately after operation is completed. The danger time for post-operative diabetics is from three to five hours after the completion of the operation. Blood chemistry studies should be made at this time even if the patient is conscious.

The postoperative treatment of diabetics requiring surgery differs materially from the after operation treatment of many surgeons. The authors give carbohydrates and liquids within two or three hours after operation is completed. If oral administration is contraindicated, give glucose intravenously and liquids parenterally, for the only way to prevent post-operative acidosis is by administering carbohydrates, liquids, and occasionally insulin.

BLOOD AND LYMPH GLANDS

Results of Radiation Therapy in Leucemia and Lymphogranuloma.—P. F. Schreiner and Walter L. Mattick (*Journal of Cancer Research,* December, 1924) report their results with radiation therapy in twenty-five cases of leucemia and forty-six case of lymphogranuloma. They found that radiation therapy is empirical, like the medical treatment of these diseases, but tends to induce remissions with least inconvenience to the patient. Medical treatment should be used wherever indicated in conjunction with radiation therapy. Radiation therapy was given in two acute cases with temporary improvement. An optimal dosage is still desired for both diseases. The authors have seen no cures of leucemias or Hodgkin's disease by this form of therapy, but marvelous amelioration of symptoms and remissions have resulted which, however, were not permanent.

Volume and Composition of the Blood in Addison's Disease.—George E. Brown and Grace M. Roth (*American Journal of the Medical Sciences,* January, 1925) say that of seventeen cases of Addison's disease observed at the Mayo Clinic, definite anemia was present in only one (six per cent.). A mild or questionable anemia was found in four cases (twenty-three per cent.). In three of five cases the cell volume index was decreased, and in three the saturation index was increased, indicating small erythrocytes with high hemoglobin content. A relatively high lymphocytosis was present in the majority of cases. According to the dye method, normal circulating blood and plasma volumes, or simple normovolemias were found in all but one case. Decreased percentages of water and of blood and plasma were observed in one case during the period of acute suprarenal insufficiency. Anemia, when associated with Addison's disease, is apparently not due to a dilution, or an increase in total blood volume, since large blood volumes did not exist in the presence of anemia. Anemia was not masked by contraction of volume, since normovolemia existed in all cases in which hemoglobin values were normal. Repeated volume determinations in three cases revealed in two marked fluctuations in cell and plasma volumes. The volume fluctuation masked only in a minor degree the percentage hemoglobin changes, since the normal cell plasma volume ratios were closely maintained.

On the Alleged Power of Bacteria to Form Bile Pigment from Hemoglobin.—Arnold R. Rich and John H. Bumstead (*Bulletin of the Johns Hopkins Hospital,* May, 1925) found that whole blood, laked blood, and solutions of hemoglobin subjected to the action of Type I pneumococcus, staphylococcus aureus, streptococcus viridans, and air bacteria showed no formation of bilirubin in amounts detectable by the van den Bergh test, the Gmelin test, or by extraction with warm chloroform. However, when these solutions were layered with nitrous acid in the Gmelin test, a distinct greenish ring slowly made its appearance in each case; but the play or colors characteristic of bilirubin, although watched for closely, was never seen. No attempt was made to determine upon what substance the appearance of the green ring depends, but in view of the negative van den Bergh test, the chloroform extraction test, and the failure of the other characteristic colors of the Gmelin test to appear, it is apparent that the substance causing the green rings was not bilirubin.

Pernicious Anemia in Its Relationship to Sprue.—Edward Jenner Wood (*American Journal of the Medical Sciences,* January, 1925) says that the close similarity of pernicious anemia and sprue suggests the possibility of the two being types of the same condition. Equally as readily in pernicious anemia as in sprue, the Monilia psilosis can be recovered from the feces, the gastric contents and the gums when pyorrhea exists. The study of the yeast is made extremely simple by the employment of a modification of Sabouraud's medium. By feeding guineapigs with the Monilia psilosis a hemolytic anemia was produced. There were also produced changes in the liver and bone marrow which were suggestive of the action of a hemolytic poison. A filtrate of the Monilia psilosis in dextrose water injected intravenously into rabbits caused blood changes apparently hemolytic in nature.

Incubational Changes in the Red Cell Count in Inoculated Malaria.—Adrianus Piper and Beth Dill Russell (*British Medical Journal,* October 4, 1924) show that a subcutaneous injection of from 0.5 to 10 c.c. of blood containing benign malarial parasites is quickly followed by a rise in the red cell count amounting to somewhere between ten and thirty per cent. This rise lasts several days, with minor daily variations, and is followed by a fall, which constitutes the malaria anemia. As an injection of malarial blood cannot very well lengthen the life of red blood cells, the rise can only be explained as an increase in production of red blood cells. Normal blood has no such effect. An injection of malarial blood is a direct stimulus for the red bone marrow toward increased activity. This stimulus might be applied for therapeutical purposes (forms of anemia, especially chlorosis). The outbreak of fever can always be prevented by an injection of neosalvarsan as soon as the increase in red cells is well established.

Chloride Content of the Blood in Pernicious Anemia.—Russell L. Haden (*Journal of Laboratory and Clinical Medicine,* April, 1925) reports the chloride determinations in thirty cases of pernicious anemia and twenty cases of secondary anemia. The whole blood chlorides are usually higher in blood with a low cell volume in both primary and secondary anemia. The plasma chlorides remain about normal regardless of the cell volume A few cases of pernicious anemia show a low chloride content. No patients with secondary anemia had low chlorides. There is no relation of the chloride level of the blood to the free hydrochloric acid of the gastric juice or to the volume index of the corpuscles. The total store of chlorides in patients with very low cell volumes is higher than normal since the blood volume shows little variation from normal and the plasma chloride content is higher than whole blood. These results give no positive evidence of a disturbance of chloride metabolism in pernicious anemia.

Inorganic Alterations of the Lymph in Canine Anaphylactic Shock.—W. F. Petersen and T. P. Hughes (*Journal of Biological Chemistry,* March, 1925) conclude from their studies on dogs in anaphylactic shock that their lymph shows an immediate increase in volume; an immediate increase in calcium; an increase in amino nitrogen; an immediate increase in magnesium; a decrease in the sodium level; and also in the potassium level; a progressive increase in phosphate, depending on the severity of the shock; and a constant level in chloride content. Preliminary stimulation of the sympathetic system increases the effect of the shock.

Observations on Blood Lactic Acid After Insulin.—Charles H. Best and J. H. Ridout (*Journal of Biological Chemistry,* March, 1925) estimated sugar and lactic acid in the blood of dogs before insulin and at varying intervals from 15 minutes to 5 hours after its administration. The results show that lactic acid of normal or diabetic dogs' blood does not significantly increase during insulin hypoglycemia when this condition is uncomplicated by extreme asthenia or marked hyperirritability.

The Comparative Value of Blood Transfusion and Blood Tonics in Secondary Anemias.—Martin Lewis Janes (*American Journal of the Medical Sciences,* April, 1925) says that persons suffering from secondary anemia due to acute or chronic disease regenerate hemoglobin and red blood cells more rapidly, more effectively, more completely and within a shorter period of time by periodic blood transfusion than those receiving inorganic iron or arsenic preparations. Iron and arsenic preparations exercise practically no beneficial effect in correcting secondary anemias.

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Medicolegal Notes.

FREEZING OF HAND HELD NOT COMPENSABLE UNDER WORKMEN'S COMPENSATION ACT

The Michigan Supreme Court holds, Hargrove v. Arnold Const. Co., 229 Mich. 678, 202 N. W. 918, that a brick mason tender, who while at work froze his hand so that amputation of part of the middle finger was necessary, did not suffer an "accident" within the Workmen's Compensation Act.

The same court holds, Sherman v. Flint Spring Water Ice Co., 229 Mich. 648, 202 N. W. 936, that where an employee harvesting ice fell and threw his hand into the water far enough to wet his mitten, which he afterwards wore for two hours when thermometer was seventeen degrees below zero, the subsequent freezing of his hand was not compensable under the act.

CONSTRUCTION OF PRIVILEGED COMMUNICATIONS STATUTE

The Wisconsin Supreme Court holds, In re Williams' Estate, 202 N. W. 314, that the statute, St. 1923, section 4075, prohibiting physicians from disclosing information acquired while attending patients professionally, should be liberally construed to effect its purpose, but not so strictly as to exclude the opinion of a physician as to the mental condition of a person, based upon observation alone, during a given period, because the physician may have rendered professional service for that person at an earlier or later time.

UNLICENSED PRACTITIONER CANNOT RECOVER FOR SERVICES

The Iowa Supreme Court holds, Lyon v. Leet, 202, N. W. 881, that, under the general and uniform holding of the courts that one who publicly professes to cure or heal, or holds himself out as a physician without a license to practise medicine as such, cannot recover compensation for his services rendered in such capacity, a note given to a chiropractor who publicly professed to heal or cure without a license in violation of Iowa Code 1897, section 2579, for services, prior to the enactment of Acts 39th Gen. Assembly, c. 7, regulating the practice of chiropratic, was void in the hands of the original payee thereof.

MEDICAL EXPERT'S OPINION AS TO POSITION OF VICTIM FROM COURSE OF BULLETS HELD ADMISSIBLE

In a murder prosecution the medical examiner testified to facts revealed at an autopsy performed by him on the deceased's body. It being the contention of the prosecution that the shots which killed deceased were fired at him while he was seated at a table, the medical examiner was permitted to testify that the course of the bullets through the body of the victim was such that he was sitting and could not have been standing on a level with the person who fired the shots, and that the latter must have been at some elevation above the person shot. He also was permitted to testify that the deceased could not have held a gun in his hand after the bullets entered his body. The Massachusetts Supreme Judicial Court held, Commonwealth v. Festo, 146, N. E. 700, that there was no error in admitting this testimony. "It related to matters outside the range of common experience. It pertained to an exact knowledge of the anatomy and the vital organs of a human body and the course of projectiles through it. It cannot be presumed that a jury would not be aided by the technical learning of a medical examiner of experience on such a subject."

MEDICAL OPINION NOT BASED WHOLLY ON EXAMINATION HELD INADMISSIBLE

At a hearing before the Illinois Industrial Commission under the Workmens' Compensation Act a physician testified that in his opinion the claimant's condition, claimed to be due to an injury to his back, was due to trauma. He also stated that he based this opinion partly upon the history of the case. The Illinois Supreme Court, Lehigh Stone Co. v. Industrial Commission, 315 Ill. 431, 146 N. E. 533, holds that this rendered his opinion incompetent. Expert witnesses are not permitted to give opinions based upon subjective symptoms. He did not treat the claimant, but examined him for the purpose of testifying. His opinion was not based wholly on his examination, and it was therefore held to be incompetent.

HOSPITAL NOT LIABLE FOR NEGLIGENCE OF ORDERLY

The New York Court of Appeals holds, Phillips v. Buffalo General Hospital, 239 N. Y. 188, affirming 207 App. Div. 640, that the complaint was properly dismissed in an action by a paying patient against a charitable hospital for injuries sustained through the negligence of an orderly who placed a hot water bottle against the plaintiff's body while she was in bed, unconscious after an operation. The court said that one who is brought unconscious to a charitable hospital as a patient does not assume the risk of malpractice on the part of the hospital; one who pays a substantial sum for room and care is not in any true sense, according to common speech, the recipient of charity and only by an hyperable may a hospital which collects $24.50 a week for board, lodging and care in a semiprivate ward be classed with the Good Samaritan, but it unquestionably has been stated to be the law of the state of New York that the beneficiary of a charitable trust may not hold the corporation liable for the neglect of its servants (Hordern v. Salvation Army, 199 N. Y. 233). The orderly, so far as he engaged in nursing, under the authority of the hospital, was supposed, like other nurses, to act on his own responsibility. If his act was unauthorized by the hospital, the rule of *respondent superior* did not apply. In neither case, as between hospital and patient, was his negligence the hospital's wrongful act.

PROMULGATION OF STATE BOARD OF HEALTH RULES MUST BE SHOWN IN PROSECUTION

In a prosecution for obstructing a health officer and refusing to allow a coyote which had bitten a person to be tested for rabies, the Oklahoma Supreme Court holds, Shilkett v. State, 232 Pac. 127, that within reasonable bounds the Legislature may confer regulative powers upon the state board of health and give the board authority to adopt rules and regulations having the force and effect of law. But where the public health statutes make no specific provision for the suppression or control of rabies and there are no averments in the information that the board promulgated any rules on that subject, the courts will not assume that such rules were promulgated.

REPORTS OF EXAMINING PHYSICIANS AS EVIDENCE

The California Legislature having amended the Workmen's Compensation Act to permit the receipt of reports of examining physicians as evidence by the Commission, it is held, Hart v. Industrial Accident Commission, 235 Pac. 748, that the weight and credibility to be given thereto is for the Commission and not for the court.

It is also held that the Commission is "justified in acting upon the report of an examining physician rather than upon theories, or suppositions or statements found in books, because the writer of the report undoubtedly knew at the time of making the same that he was subject to the call of the Commission and could be specifically and thoroughly interrogated as to any matter or statements contained therein."

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The Constitutional Effect of Prolonged Intestinal Toxemia

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There may seem some necessity to apologize for again introducing a subject about which such a vast store of literature has been produced. However, the present writer thinks with John Abernethy "that if we believe propositions to be true, or perceive truths to be important, however unimportant they may at the time appear, and if we neglect to draw inferences from them, we fail in essential duties." My object in presenting this paper is to show how prolonged intestinal toxemia often may be the unsuspected underlying cause of diffuse autointoxication, and how, frequently, the most disseminated toxicosis may be controlled by the medical, mechanical, or surgical correction of morbid intestinal conditions.

There can be no point in stressing the part which absorption from diseased tonsils, teeth, sinuses, prostates, uteri, tubes, and gallbladders may play in autointoxication, nor for enumerating the many pathological conditions, both mental and physical, which may be traced to these sources of infection. Overwhelming evidence of such selfpoisoning may be found on every hand!

Obviously, the first aim in the elimination of any toxic state is to determine the original and exact source of the focal infection—a particularly difficult matter when the source is centred in the intestinal canal, where the shifting and distention of the intestinal coils cause a constant element of uncertainty to be present even in the röntgen interpretation of abdominal conditions. However, x ray and fluoroscopic examinations, carefully executed and properly interpreted, combined with a skillful and thorough clinical diagnosis, should prove accurate methods of demonstrating any important defect of the intestinal tract.

Without doubt, medical science is agreed that there are many patients today who exhibit areas of local stagnation in the bowel. That these areas are due, in many cases, to mechanical causes—adventitious bands which form about certain sites of the gastrointestinal tract, causing kinking of the gut at points of fixation, is scarcely a fact likely to be disputed, though there may be some disagreement as to the etiology of these bands. They may prove of congenital or inflammatory origin; or, the evolutionary theory, by which Lane has interpreted their existence, may account for the greater proportion. Whatever their etiology, the result of their formation may cause an unequal support in different portions of the canal, in consequence of which obstructions, as a result of a kinking of the gut, occur and a slowing of the passage of the contents of the intestines is the result. The degree of obstruction will depend upon the extent of the kinking of the gut, the number and type of bands and the length of time the intestinal conditions have existed. The treatment, whether medical or surgical, must depend upon the amount of stasis present.

A point of delay in the passage of the contents of the intestinal canal frequently provides an ideal site for the absorption of toxins, although, as we know, the absorptive powers of the canal vary at different sites. Many interesting scientific experiments have been undertaken to establish the causes of symptoms and of death in intestinal obstruction. These experiments have seemed to prove that in such obstruction death is not due to the loss of the mechanical function in the obstructed loop, but rather to the toxic content of the blocked portion of the canal. While these studies refer primarily to acute intestinal obstruction, there seems little reason to doubt that the toxemia produced by an acute condition and one produced by a chronic condition differ largely in the severity and rapidity of the climax. The toxicity in acute obstruction frequently will cause death within a few days, while that of chronic intestinal poisoning may produce symptoms over a period of years, particularly in autotoxic subjects who have acquired a certain amount of immunity which saves them, sometimes for years, from the serious sequelæ of their condition. The effect on the constitution of prolonged intestinal toxemia, I wish to emphasize in this paper.

The close relationship between a toxemia originating in the alimentary tract and the many apparently remote symptoms in the patient has long been recognized, though, perhaps, not duly stressed. One of the first symptoms exhibited by the autotoxic subject is the remarkable change in the skin which, in many of these cases, becomes darker and darker and progressively pigmented. On the back of the upper arm the skin may be thick and feel, in severe cases, as if it were affected by a firm, brawny edema. The skin on the forearm and hand is mottled, being bluish and yellow in patches, while the fingers may be blue or cyanotic.

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Intestinal toxemia is common among the causative factors of socalled functional heart disease. People who suffer from socalled indigestion of long standing very often develop, in time, structural changes in the heart muscle. Sir James Mackenzie frequently referred in his writings to "poisoned hearts." He described these toxic heart patients as exhibiting other phenomena indicative of toxic poisoning—discoloration of the skin; general exhaustion with collapse and long periods of unconsciousness. Mackenzie reported a case of a woman who suffered from a Bacillus coli infection for some years. "Her heart muscle had been affected to such an extent that even the most elaborate methods of treatment for the heart condition had been without result. The prognosis was bad. Finally, medical treatment for the intestinal toxemia was instituted and, after eighteen months of such treatment, a complete recovery was secured, in spite of the severity of the cardiac impairment."

Dr. F. A. Craig recently reported "that in nine thousand cases of intestinal toxemia which he treated, one third of the patients had had sanatorium experiences for socalled neurasthenia." He adds "that in many of these cases there were very clear evidences of toxic poisoning—sluggishness of the mentality, loss of concentration, memory and coordination." The mental depression and depreciation associated with prolonged intestinal toxemia are, in many instances, of severe type. Patients so handicapped are unable to concentrate. They are subject to attacks of faintness, vertigo, neuralgia and headache due to the large excess of toxic material in the circulation.

Sir Arbuthnot Lane reports the case of a medical man who for years had been so drowsy, much of the time, as to appear to be under the influence of a narcotic. In time, the condition became so intolerable that it was impossible for the physician to continue in practice. Finally, he was operated upon and, following the surgical correction of the intestinal stasis, the mental condition cleared and the patient was enabled to resume his professional life.

In an earlier paper, I recorded a series of cases of abnormal mammary changes apparently caused by autointoxication. In many of these breasts a condensation or lobular induration of the upper, outer quadrant, develops usually along the edge of the large pectoral muscle, and where the dependent breast drags on the upper axillary margin. In some cases there is an abnormal discharge from the nipple, in conjunction with the condition described above. Such terms as toxic breasts, lumpy breasts, or stasis breasts are applicable to mammary changes of these types.

The two following cases are reported to illustrate 1, the result upon an abnormal breast condition of the surgical correction of the intestinal stasis, and 2, the return to normal of the mammæ when a coexistent intestinal toxemia was relieved by therapeutic measures.

Case I.—A.B.; twenty-five years of age; widow. In March, 1915, this patient had an attack of pain in the right iliac fossa. There were several recurrences of the pain which was so severe that it was necessary for the patient's physician to prescribe morphine.

In August, 1915, a lump developed in the left breast, accompanied by a bloody discharge from the nipple. A diagnosis of cancer was made by two physicians, and a radical amputation of the breast advised.

During February, 1916, the patient consulted me. On examination, I found distinct tenderness of the right iliac fossa, much abdominal gas, and a socalled lumpy condition in the upper quadrant of the left breast which on deep pressure exuded a bloody serum from the nipple. I advised that the breast be kept under careful surveillance, and that the abdominal conditions be corrected surgically.

Abdominal section was performed March 11, 1916. The cecum was found to be large and pendulous; the terminal ileum dilated; there was an incompetent ileocecal valve, and many abdominal bands and adhesions. These conditions were corrected.

Convalescence was uneventful. A short time after the operation, the lumpy condition of the breast and the bloody discharge disappeared. In May, 1924, the patient was in excellent physical condition, and upon examining the breast I found it normal.

In this case a definite pathology of the breast tissue was eliminated by the timely surgical correction of the factors responsible for the intestinal toxemia.

Case II.—I. M.; twenty-five years of age; female; single. This patient consulted me in May, 1919, for a lumpy condition of the right breast. On examination I found general enteroptosis; masses of feces in the lower colon; considerable gas in the transverse and ascending colons; a floating kidney and a lobulated condition in the upper, outer quadrant of the right breast. Tonics, an uplifting corset, laxatives, special abdominal exercises, and a general hygienic régime were prescribed. After following these therapeutic measures for one year the patient reported that the breast lumps had completely disappeared. By careful attention to the intestinal tract the patient has prevented any recurrence of the abnormal condition, and the breast is normal today, six years afterward.

Not only the breast, but the thyroid and other glandular tissues are dependent upon the type of the blood supply for their nutrition. The thyroid gland in particular must be supplied with the proper material in order to secrete and thus help maintain the proper endocrine balance of the individual.

Leonard Williams, in writing of thyroiditis, says: "There are hundreds of people who have a daily evacuation of the bowels but who are, nevertheless, walking septic tanks. These tanks are terrible depressors of the thyroid and unless you empty and disinfect them, your correct diagnosis of thyroid inadequacy, and its logical thyroid therapy, will avail you nothing."

The weight of evidence today tends to prove that alimentary toxemia is the basic cause of numbers of goitres, and that many goitres of this type diminish or disappear as a result of medical or surgical measures which have the effect of draining the intestines.

McCarrison (Robert), by the oral administration of fecal bacteria to animals, is able to produce goitre, cretinism and parathyroid disease in them. He has treated many goitres with vaccines prepared from organisms known to inhabit the intestines, and reports considerable success from such methods.

FIG. 1 FIG. 2 FIG. 3

FIG. 1.—A, large cecal diverticulum; B, socalled Jackson's membrane; C, kinked and underhung appendix; D, ileopelvic band; E, ileum held up by a retractor, it is distended by the backward flow of intestinal content from the large bowel.

FIG. 2.—A, band constricting large bowel; B, appendix; C, distended diverticulated cecum; D, dilated duodenum from backward pressure of bands.

FIG. 3.—A, socalled Jackson's membrane; B, appendix; C, diverticulated cecum; D, dilated ileum.

I do not wish to imply that all types of goitre can be cured by the measures, either medical or surgical, which restore the function of the intestinal canal. There are, however, cases of thyroidism which clear up completely when the toxic elements of the system are removed—as the atrophic gland, with small isthmus, which may increase in size and function when the toxemia is relieved, or the hypertrophic gland which also may resume normal functioning when the auto intoxication is eliminated. As early as 1779, the relation between goitre and a static condition of the intestines was outlined by Wilmer, a surgeon of Coventry, England, who, in an old and interesting volume of surgery, cited two cases of bronchocele (goitre) which were cured by "certain measures." In one case the prescription called for "a medicine composed of millepedes, burnt spunge and cinnabar of antimony." The patient was to be "purged at intervals with mercurial cathartic pills." Probably the "purging at intervals" had a more vital bearing on the cure of the bronchocele "in forty days" than was evident to the author of the illuminating old volume.

In many cases of toxic goitre, the medical or surgical treatment of the intestinal condition will relieve the abnormal stimulation of the thyroid gland. There are, of course, many patients who are so thoroughly poisoned with thyroid toxins that correction of the intestinal condition *alone* is useless and in these cases the necessity for thyroidectomy is evident.

The two cases herewith reported illustrate most clearly that the relief of intestinal stasis by surgical means may largely correct a persistently morbid condition of the thyroid, and restore the normal functioning power of the gland.

CASE III.—B. N.; thirty-five years of age; female; married. This patient consulted me February, 1917. She was suffering from pain in the epigastrium, and continued vomiting. There was tenderness in the

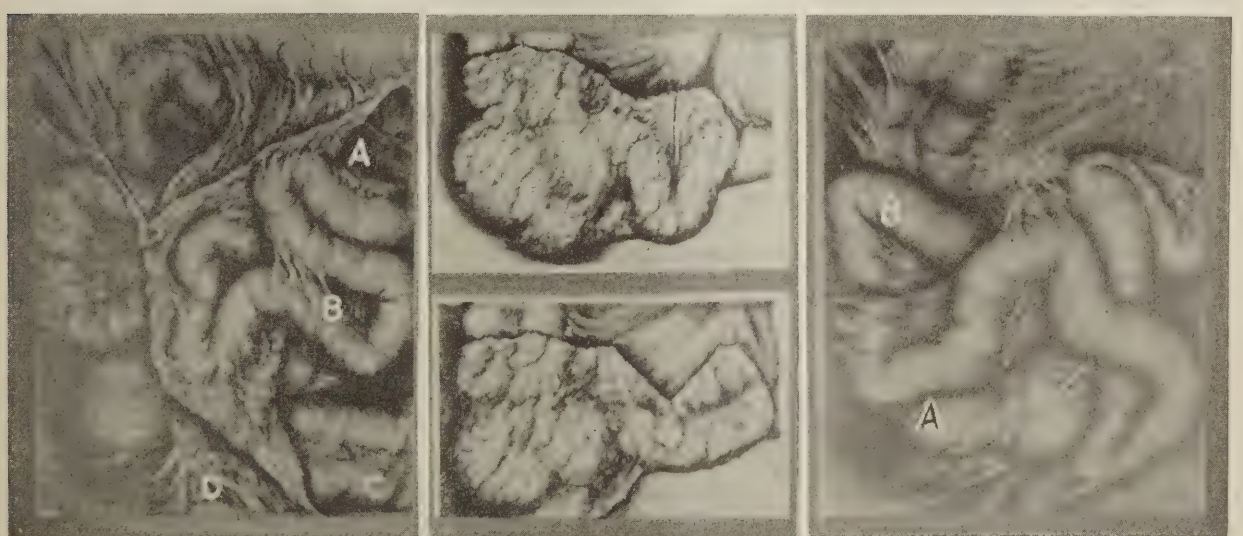

FIG. 4.—A, omental adhesions; B, adhesions between cells of small bowel; C, large bowel.

FIG. 5.—Omental grafts placed over raw surfaces of intestine.

FIG. 6.—A, cecum; B, loop of small bowel over large gut, adherent to lateral wall.

right iliac fossa and over the gallbladder. Her weight was 203 pounds. Her breasts were large and dependent. The thyroid gland was atrophic. X ray photographs showed esophageal diverticulum, and intestinal bands and adhesions constricting many points.

Laparotomy was performed May, 1917. There was marked constriction of the ascending colon by a very tight band across the gut. The adhesions which covered many other points in the intestines and a chronically inflamed appendix were removed.

The autointoxication had been present for years and the thyroid gland had become atrophic to such an extent that it was necessary to institute thyroid therapy.

Since the operation the patient no longer suffers with the abdominal pain or with the vomiting. She has lost fifteen pounds. As a result of the elimination of the intestinal toxemia, the thyroid gland is functioning in a more satisfactory manner but the prolonged autointoxication has damaged the gland to such an extent that some thyroid therapy, although less than formerly, is necessary in order that the patient may lead a comfortable and normal existence.

Case IV.—A. S.; twenty-four years of age; female; single. This patient consulted me in May, 1916. She had a large goitre; there was pulsation in the neck, and the eyes were prominent. The patient complained of soreness and pain over the appendicular region.

X ray examination showed intestinal adhesions and bands, and operation was performed June 10, 1916. The head of the colon, with very short mesentery, and terminal ileum were found to be apparently congenitally retropoised and attached to the posterior wall with a broad band. The appendix was subacutely inflamed and filled with material. There was accentuation of the last kink of the pelvic colon. These conditions were corrected and the patient's recovery was uneventful.

Four months after the operation there were no longer any abdominal symptoms and the goitre had completely disappeared. Five years later the patient reported that she was in excellent health.

The cases herein reported will bear out the premise that autointoxication, as a result of intestinal stasis, may be the basic factor in many abnormal mental and physical conditions. Premature senility of the organs and the impairment of the functions of the tissues are, perhaps, the most evident results of prolonged intestinal toxemia.

There are many cases of intestinal stasis, with resultant autointoxication, in which the static condition of the intestines may be obviated by early therapeutic measures, as I have repeatedly pointed out in previous papers. These are mild cases of stasis, some of congenital origin, which respond to purely preventive action. In an interesting paper purely preventive action. In an interesting paper (1) Dr. E. M. Mosher emphasizes "skeletal variations" stasis and states "that in the measurement of one hundred enteroptosis cases she found, without a single exception, the sternum short and the sternopubic diameter long, whereas in women in whom no enteroptosis was manifest, a long sternum and comparatively short sternopubic diameter was the rule." Dr. Mosher adds "that marked disproportion between the sternal length and the length of the abdomen upon its median line means a weak abdominal wall. The congenitally short sternum cannot be lengthened, nor the sternopubic line shortened, but the costal angle can be widened and the abdominal wall strengthened, in many cases, by well directed exercises." Dr. Mosher suggests "that physicians should carefully classify patients with reference to this anatomical defect and instruct mothers, teachers and physical educators regarding the importance of beginning with the child such developmental exercises as will tend to correct this skeletal defect." Physiotherapy, with special abdominal exercises, is often of great benefit in many of the earlier cases of intestinal stasis.

In all beginning types of stasis, with enteroptosis, a properly fitted and adjusted abdominal belt must be worn. This should be applied constantly to correct the tendency of the abdominal viscera to downward displacement—the result of civilized man's assumption of an upright posture and a primary cause of the change in the mechanical relations of the alimentary tract—the theories of which I have described in detail in an earlier paper (Bibliography 7). The belt should be retained until Nature has restored the tone of the abdominal supports and offset the visceroptosis.

Patients with autointoxication require more fresh air than the normal person—so that the increased toxic products of the system may be oxidized into a form which can be easily eliminated. Plentiful hydration is also an asset. Since the aim in all intestinal toxemia is to reduce the gastrointestinal fermentation, the diet should be antiputrefactive as far as possible and sufficiently laxative to produce a satisfactory emptying of the bowel, preferably night and morning. Too much emphasis cannnot be placed on these daily evacuations.

Ochsner (E. H.), in treating patients suffering from chronic fatigue intoxication says, "that some of the most severely afflicted can be saved only if they are given one ounce of castor oil every evening, in order that the results of the faulty digestion may be removed from the intestines daily and the fatigue material which may have found its way into the gastrointestinal canal be eliminated before it is reabsorbed." My own experience has proved that liquid paraffin, intestinal antiseptics and high colonic irrigations are among the most efficacious methods of overcoming the absorption of toxins from the intestinal canal, in early cases of stasis. Kaolin and belladonna are adjuncts suggested recently by some writers who state "that these drugs control the spasm in inflamed conditions of the bowel and help to reduce the infection of the food supply."

In the midgroup of stasis are placed those cases which have progressed to the point where preventive measures—medical measures—are inefficient. These require surgical procedure of the first degree In many of these conditions of stasis it is possible to repair the drainage system by severing bands, straightening kinks and angles and replacing the hollow organs. The bands should always be cut transversely and sewed longitudinally, in order to give action to the constricted part of the gut, and,

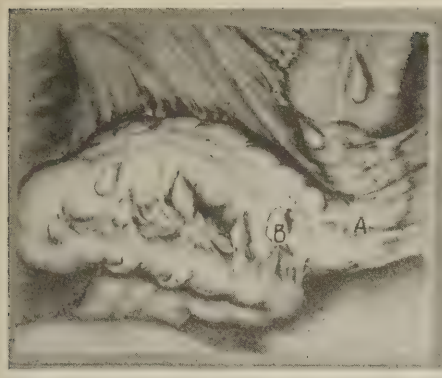

FIG. 7.—A, accentuated last kink; B, adhesions.

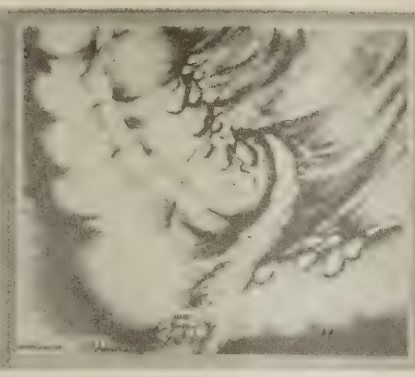

FIG. 8.—A, cecum; B, terminal ileum adherent to caput coli.

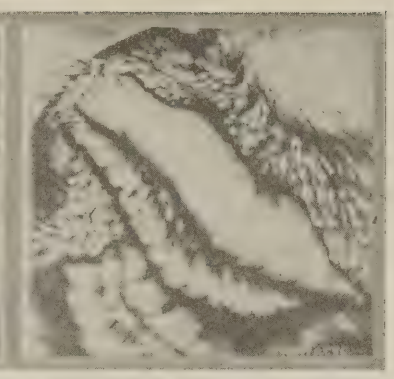

FIG. 9.—Adhesions in right upper quadrant, involving stomach, liver, and large bowel.

since the appendix often plays a large part in the kinking of the ileum and the misplacing of the cecum, its removal will prove an added advantage. The great majority of stasis cases demanding any surgery may be placed in this midgroup class and, by careful plastic surgery of the intestinal canal, the patients may be saved the necessity of more radical operative procedure at a future date.

The following case reports illustrate the type of cases which come under the head of gastroenterological plastic surgery—the midgroup stasis—and something of the surgical technic which I employ.

CASE V.—J. B.; thirty-seven years of age; married; three children. This patient consulted me February 15, 1917, for pain in the epigastrium; excessive gas; a feeling of constant distention, and the loss of thirty pounds in weight in one year. There were many headaches and marked depression. Clinical and x ray examinations indicated that there were a number of adhesions causing intestinal stasis.

Operation was performed March 16, 1917. On opening the abdomen the great omentum was found firmly adherent to the abdominal wall along the line of an old incision through which the appendix had been removed some years previously. The abdominal wall, the caput coli and about two two feet of the small intestine, nearest to the ileocecal valve, were also caught in the omental adhesion. When the omentum was released from these attachments, the last two feet of the small intestine was found angulated upon itself, twisted upon its long axis and kinked on its short axis; it was difficult to believe that anything could pass through a gut so angulated. The butt end of the cecum was found adherent to the flank with a marked ileopelvic band running down into the true pelvis. This was bisected transversely and sutured longitudinally and the small gut brought into position. A loop of the redundant sigmoid was also adherent to the cecal region and a section was grown together by an amalgamation of the appendices epiploicæ. There was a band across the duodenum from the gallbladder to the transverse colon.

All the bands were bisected and the raw surfaces turned in as far as possible. On the cecum and lower ileum some areas of raw surface had to be covered with omental grafts. The convalescence was uneventful, and in March, 1924, the patient reported that he was in excellent mental and physical condition.

FIG. 10.—A, duodenal jejunal angle markedly accentuated; B, jejunum empty; C, transverse colon.

CASE VI.—R. C.; male; forty-five years of age; single; lawyer. For sixteen years this patient had pain, off and on, in the region of the gallbladder and right shoulder. He had a great deal of indigestion; belching of gas; regurgitation of food; constipation and, at times, breathlessness. Seven years previous to consulting me he had had his appendix removed and a year later cholecystotomy performed, but the gastric symptoms had not disappeared.

On examination, I found tenderness midway between the appendical scar and the umbilicus, and on deep pressure, up under the costal arch. There was much gas in the intestines.

X ray examination showed adhesions about the descending duodenum and in the region of the gallbladder, with distinct points of kinking.

Operation was performed September 12, 1917. On opening the abdomen there was found a dense mass of adhesions in the right upper quadrant. Two and a half feet from the ileocecal valve the small gut was turned to the outer side over the ascending colon and was adherent to the posterolateral wall of the abdomen, and there were adhesions from the gallbladder to the small intestine which kinked it at an acute angle. This extremely tight band was cut transversely, the intestine released and the raw surfaces turned in. A marked ileopelvic band which bound the terminal ileum tightly over the right ureter and internal iliac vein, and a band across the hepatic flexure were severed. The liver, outlet of the stomach and duodenum were all encased in the mass of adhesions. These were all released, raw surfaces carefully sutured, and the abdomen closed. The patient had an uneventful recovery and, in the eight years since operation, has remained in excellent condition.

CASE VII.—E. A.; eleven years of age; female. This patient came under my care in June, 1916, at the suggestion of Dr. Graeme Hammond. The birth and early childhood were normal except for

chronic constipation which was present even during babyhood, when it was necessary to give the child an enema almost daily. X ray of the skull showed no abnormality. The family history is irrelevant.

In September, 1915, at ten years of age, the patient had attacks of what was apparently *petit mal* —as many as twenty a day. She was placed in a hospital where she remained for four months taking a rest cure; on a fruit and vegetable diet for eleven weeks and, later, on a milk diet for five weeks. The attacks did not abate. Dr. Hammond barred out essential epilepsy, and sent the patient to me.

On clinical examination, I found distinct tenderness over the head of the colon and appendix. The large intestine was prolapsed; the cecum was much distended and lay in the true pelvis. X ray of the intestinal tract showed "a delay in the passage of the food through the terminal ileum, the transverse colon and sigmoid. The appendix retained barium for several days. The colon plates, twenty-two, forty-seven and seventy hours after the injection of the solution showed that a large amount of the barium was retained in the colon, and dilated the cecum and ascending colon."

Operation was performed June 23, 1916. The gallbladder was distended and attached to the first portion of the duodenum by a tight band which continued down over to the transverse colon near its hepatic flexure, which was prolapsed. The stomach was dilated to an unusual degree for so young a child, the greater curvature almost to the bladder. A band, about three inches broad, ran from within an inch of the tip of the gallbladder to the vessels of the gastrohepatic omentum. There was a duodenal kink of marked degree. Just above the cecum the ascending colon was bound down tightly; the hepatic flexure was grown to the ascending colon and the sigmoid was very redundant. There was an ileopelvic band, about three inches from the ileocecal valve, which was so placed mechanically that the cecum, which had already begun to form a diverticulum, caused a degree of ileal stasis which might easily account for the ileal delay. The bands were severed; the diverticula were turned in, first being treated with iodine; the cecum was plicated, and the cecum and ascending colon were elevated, rotated outward and anchored to the posterolateral shelf. The patient left the table in good condition.

Following the operation, the nerve condition rapidly improved. The seizures of *petit mal* were reduced to a minimum and, except for a slight attack at long intervals (and these usually follow a protracted excitement or fatigue), finally disappeared. The patient has remained in excellent physical condition—a member of the high school basket ball team—and has made a brilliant record as a student both at high school and during her first year at college. She enjoys all the pursuits of the perfectly healthy girl and, on examination, August, 1925, I found her normal in every respect.

The most advanced cases of intestinal stasis are those which, because of neglect, or despite preventive treatment, have progressed to a point where plastic surgery is no longer effective and more than conservative measures are indicated. In previous papers, I have stressed again and again the importance of *early* surgical correction of intestinal stasis (cutting bands, anchoring, plicating, straightening kinks and angulations, etc.) and have emphasized particularly the necessity of corrective surgery at the site of the socalled last kink. Too little attention has been paid by surgeons to this angulation. It is this last kink which frequently attaches itself to the left ovary which, in consequence, may become cystic. The rectum, too, may become involved. In numerous cases of stasis which have come under my observation, the crux of the entire static intestinal condition was centred at this point of the canal and surgical repair of this one kink eliminated the intestinal stasis.

In my own experience, short circuiting in extreme types of stasis, where other surgical measures of lesser degree have failed, has often given most satisfactory results. I have always maintained that except in the rare instance, or where malignancy may have developed, partial or total colectomy is an unnecessarily radical operation. Recently, several operative measures have been proposed as substitutes for these more extreme surgical procedures. George E. Waugh (2) suggests an operation which he calls "fixation of mobile ascending colon." Roland Hazen (3) describes his operation "replacement and retention of the colon by fusion." Colonic exclusion is a surgical procedure suggested by Herbert J. Paterson (4). Paterson states "that in colonic exclusion nothing is removed; it is, therefore, less severe than total excision of the colon; the mortality rate is lower, and there are no tags or raw surfaces left behind to lead to intestinal obstruction." I have been fortunate in having had the opportunity to observe the technic of Paterson, Waugh and Hazen, in their own operating rooms, and to see also some of the excellent postoperative results secured by these surgeons. I believe, therefore, that before resorting to any of the more radical surgical measures these substitute surgical procedures, or any others of equal practical value, should be given the most thorough investigation and thoughtful consideration.

In ileocolostomy the abdomen is opened and the lowest point of obstruction located. The ileum is divided slightly obliquely, encroaching upon the convexity; the distal end is invaginated by a purse string suture, and the proximal end is implanted into the lowest accessible portion of the pelvic colon (an end to side junction; or a lateral or oblique). A full sized esophageal tube may be introduced through the anus, up through this anastomotic juncture, its passage being facilitated by injecting paraffin into the tube by means of a Higginson syringe. The tube is passed through the opening in the colon and for about twelve inches along the ileum. It is secured in the anal region in the male and to the back of the vulva in the female—and the short circuit is complete. The tube remains for three to seven days.

The following case report illustrates the type of intestinal stasis, which, necessarily, is placed in this group, and the operative procedure employed to correct the mechanical defects of the intestinal canal:

Case VIII.—C. Y.; twenty years of age; female; single. At thirteen years the patient began to have convulsions at intervals of two or three months. Simultaneously with the first convulsion there occurred an attack of constipation which amounted al-

most to obstipation—the bowels could not be moved except with an enema. The convulsions and attacks of constipation continued, and, after consulting a dozen physicians (and having an x ray of the skull, which proved normal), it was decided advisable to do an exploratory laparotomy.

Operation was performed by me June 14, 1916. On opening the abdomen there was found a marked accentuation of the last kink and also a redundant sigmoid. The cecum was dilated and partially prolapsed. A Y shaped band extended from the lateral wall of the abdomen, its two prongs reaching across the ascending colon at about its middle point and almost completely obstructing the gut. From this band downward toward the butt of the cecum the gut was dilated; above the band it was collapsed. The ileocecal valve was incompetent, with great dilatation of the terminal ileum. There were numbers of pericolic bands across the ascending colon but the main support of the gut was the Y shaped band extending across it to the mesial line. There was a marked duodenojejunal kink with bands underneath the transverse mesocolon extending well up toward the free margin of the attachment of the transverse colon. When these bands were cut it was clearly seen by all those present that the small intestine below the band became greatly distended. The appendix was removed and the duodenojejunal kink corrected. A short circuit was performed in the usual way, care being taken to insert below the last kink. The patient's convalescence was prolonged because of the nerve element which entered into the case but she recovered and there were no longer attacks of obstipation. The convulsive seizures are now of very rare occurrence and light in character. The accompanying photographs will demonstrate the intestinal conditions revealed at the operation.

In these various types of stasis (the beginning cases, the midgroup and the advanced), the treatment must be modified according to the individual. In many, the simpler surgical procedures will prove effectual to remove the intestinal stasis, and, thus having eliminated the causative factor, the autointoxication, with the resultant morbid conditions of the system, will disappear. The disastrous possibilities which may be the outcome of permitting these conditions of intestinal stasis—these sites of mechanical irritation, exposed to contact and strain—to remain uncorrected, can only be surmised. This much we do know of malignancy today, that cancer frequently develops at the site of prolonged chronic irritation. Sir Arbuthnot Lane writes "that as a result of his observations, which have extended over many years, he is exceedingly impressed by the sequence of cancer and intestinal stasis."

In closing, I wish to repeat that herein are presented no new principles in medicine. My chief aim in contributing this paper today is, 1, to reemphasize the vast importance of toxic absorption from the intestinal canal as the factor mainly responsible for many widely diffused and apparently unrelated morbid conditions of the body; 2, to suggest the therapeutic and surgical measures through which the intestinal stasis which produces this autointoxication may be eliminated, and 3, to offer these case reports in evidence that as soon as the prolonged intestinal toxemia is relieved, often the impaired organs and tissues resume their normal functioning powers and a cure is effected!

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A complete bibliography of articles by the author on stasis will appear in the reprints.

Tumors of the Fingers

With Report of Cases

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Textbooks give little or no space to the description and discussion of tumors of the fingers, probably on account of the comparative infrequency of the occurrence of such tumors. In 1911, Mueller (1) reported that among 19,000 patients of all kinds treated at the Berlin Polyclinic, there were only eleven cases of finger tumors. Among those which do occur chondromata and sarcoma are the most frequent. Pure fibromata are rare, only a few cases being reported in literature, although there are many cases of mixed fibrous tumors.

I recently operated in two cases of fibroma of the right index finger, the particulars of which follow:

Case I.—G. E. F., male, white, aged fifty-three years, printer, entered the hospital on May 14, 1924. He had gonorrhea thirty-one years ago; was operated on three years ago for an affection of the foot, said to have been caused by wearing black stockings; he had had some dyspepsia. He came to the hospital on account of the tumor on the right index finger. This growth had first been noticed by patient about two years ago. It had grown very slowly, and until recently had caused neither pain nor inconvenience, but of late it had been more rapid, causing some limitation of motion and some inconvenience by its presence. No history of traumatism nor any other cause which might account for the appearance of the tumor could be elicited.

Examination showed a tumor on the basal phalanx of the right index finger, the skin over which was discolored and ulcerous, the discoloration extending to the dorsal aspect of the hand. The history and general appearance of the tumor, with a tendency to ulceration, suggesting malignancy, it was deemed best to excise the mass completely so that its exact

nature might be studied microscopically. This was done (Fig. 1). The patient made a speedy recovery, leaving the hospital in good condition a few days after the operative procedure.

Description of excised tumor.—Macroscopically the tumor when removed presented the following features (Fig. 2):

It was a hard mass, somewhat nodular and smooth

Fig. 1.—Showing location of tumor, line of incision and appearance of wound two days after operation.

in appearance and rather pale (whitish) in color. It was approximately the size of a walnut and oval in outline. On sectioning it presented a hard, glistening surface on which a few coarse fibrous bands could be seen, confirming the fibrous characteristics of the growth. It gave the sensation of fibroid tissue so frequently seen in uterine fibroids. Through the centre of the mass a small artery was noticeable, apparently the main blood supply; but on the whole the tumor was poorly vascularized. No distinct capsule or lobulation was present. Microscopically the specimen presented the typical appearance of a pure fibroma (Figs. 3 and 4). The fibres were closely packed and had an irregular distribution. The cellular elements were displaced laterally and elongated in shape. The lymph spaces of the tumor were very narrow and the blood capillaries very few.

Anatomical diagnosis.—Fibroma of basal phalanx of right index finger. An examination of the patient six months after the operation showed him free from recurrence. Motion of the finger was perfectly normal.

A similar case in which I operated disclosed microscopically the presence of sarcomatous elements, which subsequently necessitated amputation of the affected digit to prevent sarcomatous dissemination.

A fairly extensive search through the literature has revealed only a few cases of pure fibromata of the finger.

In Gurlt's (2) classical study of the occurrence and distribution of tumors, he collected statistical details regarding 16,630 neoplasms. Of these 699 were fibromata of which only two were situated on the fingers. The comparative frequency is shown by the fact that of 894 sarcoma five were on the fingers, of 136 chondromata nineteen were on the hands and fingers, and of 11,131 carcinomata only one occurred on the finger.

The earliest published case of fibroma of the finger that I can find appears to be that of Nélaton (3). This author, in 1856, reported the case of a youth fifteen years of age, from the palmar surface of whose left ring finger three such tumors were removed. The tumors had involved the fibrous tissue of the tendon sheath, although independent of it, and were histologically verified after excision.

Monod (4) reported a case of vascular fibroma of the middle finger of the left hand, in a woman fifty-three years of age. This was a mobile, nonfluctuant tumor, which had commenced thirty-three years before as a small wart. The finger was amputated, and a histological report showed that the tumor was a fibroma undergoing cavernous degeneration.

McDonnell (5) reported a case of microscopically verified pure fibroma of the left forefinger in a woman aged thirty-four years. There was no history of injury and the first appearance of the tumor was about two years previous. The tumor was lobulated and two of the lobes were ulcerous. The head of the metacarpal bone with the phalanges of the finger were removed. In regard to the origin of this tumor, the reporter states: "We can perfectly trace the origin of the tumor springing from the dorsal surface of the central phalanx. It is at the insertion of the extensor tendon and is attached at the dorsal aspect and also for some distance up the bone; but the most intimate point of attachment is where the tendon makes its closest connection with the bone. It is a fibrous tumor involving the fibres of the tendon."

Chisholm's case (6) was in a woman of twenty-seven years, who for fourteen years had suffered from a painful tumor at the end of the right ring finger. This had commenced without any apparent cause as a painful twitching; a few years later the pain became more intense and continuous. The whole course of the ulnar nerve was painful. On operation a small tumor was found below the skin and lying close to the bone. Microscopically the tumor was fibrocellular with a distinct capsule. The tumor enclosed several nerve endings.

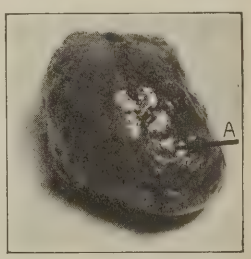

Fig. 2.—Appearance of excised tumor, actual size. A, ulcerated area of skin overlying tumor.

Tissot (7) removed a fasciculated fibroma of the right index finger from a girl of fourteen years. There was no history of traumatism. The tumor was small, mobile, nonfluctuant and painless; the skin was normal. Microscopically the tumor originated from the tendon sheath, and was very hard, whitish in color and woody. Tissot mentioned that Notta (8) reported a case of fibromata of the carpal sheath of the flexor tendons; this tumor was the size of a hen's egg, and was situated between the tendon pocket and the metacarpal bone; it was fluctuant and cystic at its centre. He also mentioned that Woodworth reported a case of fibroma adherent to the finger tendon sheath.

Barbet (9) has recently reported a case of tumor

of the pulp of the right index finger, which he removed from a woman aged forty years. Histologically the tumor was a pure fibroma without any adherence to the skin or the subjacent planes. There was no history of traumatism.

Frank's case (10) reported in 1908, was rather different from those above reported in that the tumor was apparently congenital. Two small growths ap-

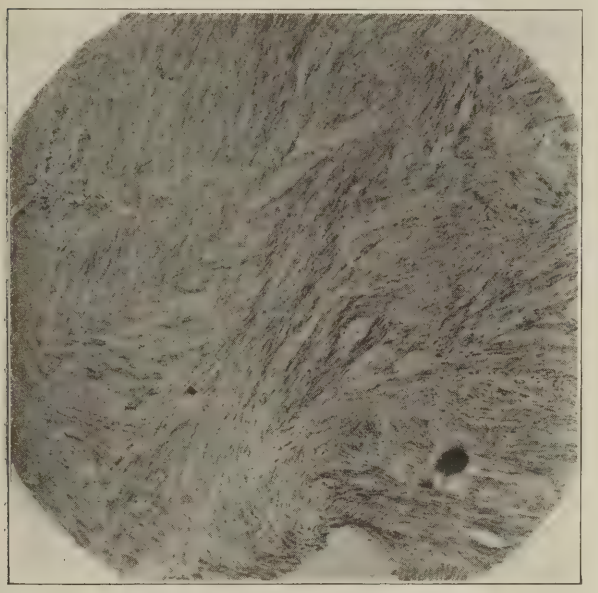

FIG. 3.—Photomicrograph of tumor enlarged 95 diameters 4x16; hematoxyline and eosin stain, Leitz apochromatic.

peared shortly after birth at the terminal phalanges of the fourth and fifth finger of the left hand and were removed. Histologically the tumors were fibromata.

The few cases reported above suffice to show that true fibroma of the finger is rare.

As Virchow has pointed out, the most striking feature of tumors of this kind, which distinguishes them from sarcoma, is that while the growth originates usually from the bone and involves its surface, the mass of bone beneath retains its strength and firmness and is in no way softened, absorbed or carious. A fibroma may, however, arise from the fibrous tissue of the tendon sheath.

There is no evidence that traumatism plays any part in the production of such tumors, although a traumatism may favor its development or even its degeneration into malignancy. That heredity or disposition may be factors seems possible from Frank's case.

True fibrous tumors of the finger are rare; and of the false tumors, fibrosarcomata are the most frequently observed. Fibrosarcomatous tumors generally arise from the tendon sheaths and are variously described as myeloplax sarcoma, giant cell sarcoma, fusocellular and globocellular sarcoma, etc. The lack of uniformity in the nomenclature of these tumors arising from the same tissue and characterized by an abundance of myeloplax cells, is somewhat confusing and seems to need revision.

Rosenthal (11) in 1909 collected forty-seven cases of such finger tumors from the literature, which he classified as forty-one myeloplax or giant cell fibrosarcoma, three spindlecell, one myxofibrosarcoma and two of doubtful type. Tourneaux (12), in 1913, increased the number to forty-eight cases, of which eight were situated on the thumb, thirteen on the index finger, eleven on the middle, eleven on the ring, and five on the small finger.

Myeloplax sarcoma is most frequently observed, and appears to be connected with the fact that the sarcoma develops in the finger where the tendons are almost in direct contact with the bone and devoid of endothelial or epithelial investment.

Sarcoma of the tendon sheath appears to have been first described by Chassaignac (13) in 1852. Heurtaux (14), who investigated these tumors, endeavored to show in 1891 that beside the rapidly evolving proliferating and easily recurring type of tumor originating from the figured connective tissue cells, there is another type distinguished by the presence of abundant myeloplaxas. To this type of tumor he gave the name of myeloma, which term connoted a benign type of neoplasm as compared with the first. This theory was generally accepted until 1909, when Rosenthal (11), from the study of seventy-one general tendon sheath tumors was forced to conclude that there was no essential difference between the two classes of tendon sheath tumor described by Heurtaux, and that all such tumors were malignant.

In the finger the usual site of tendon sheath sarcoma is in the flexor tendon sheaths. Of Tourneux's forty-eight cases, thirty-two originated from flexor tendon sheaths and only sixteen from extensor tendon sheaths. The majority were on the right side. The tumors grow by invading the peritendinous cellular

FIG. 4.—Same as preceding magnified 248 diameters. Note scanty blood supply and typical forms of fibrous tissue cells.

tissues, and progress toward the superficial planes of the skin. The skin over the tumor is usually not involved until perhaps the tumor is far advanced, but is free and unchanged in color. The tumor generally contracts adhesions with the underlying structures and has but little tendency to ganglionary or visceral metastases, although generalization through the blood or lymphatics may occur.

The cases reported by Suter (15), Fordyce (16), Jean (17), and a few others were fibrosarcoma of the finger tendon sheaths. In Suter's case a man injured his thumb eight years previously; there was severe and increasing pain for several years. Histologically the tumor was seen to be in one part a true fibroma, but in another part, especially where the growth joined the bony surface of the phalanx, sarcoma was evident. Fordyce's case was in a child nine months old, the diagnosis being based on a biopsy examination. Jean's case was a fusiform fibrosarcoma originating from the sheath of the common extensor tendon of the fingers.

Sarcoma of the finger arising otherwise than from the tendon sheaths appears to be very rare, and only a few scattered reports occur in the literature. These tumors generally originate from periosteum or from unusual tissue.

Fibrochondroma of the fingers has been reported by Rocher (18), Jacobson (19), and others. Cases of fibroangioma have been described by Tourneux and Lefebvre (20) and by Mermet and Lacour (21). Chandelux (22) and Key (23) described cases of fibromyxoma of the fingers. Vogt (24) reported a curious case of congenital fibrous elephantiasis of the finger.

Mermet and Lacour consider their angiomatous fibromata (two cases) as originating from slight traumatism of the skin. They were dermatofibromata of traumatic origin and purely inflammatory. Both cases began after a slight skin injury.

Lipomata of the fingers are nearly as rare as fibromata, and less than twenty such cases are known. Martin and Grenier (25) have recently reported a tumor of this type on the palmar surface of the left ring finger, which histologically appeared to be of periosteal origin.

Tourneux and Lefebvre's case (20) of fibroangioma was interesting from the point of view that it was probably congenital. The tumor dated from birth and increased very slowly for six years. The authors think that it increased at the expense of the derm, which proliferated profoundly and invaded the periosteum of the phalanx of the middle finger. The histological examination showed that the tumor was a fibroangioma developed at the expense of the derm and was almost entirely composed of fibrous elements, there being but very few connective cells.

There are no special characteristics which distinguish a fibroma clearly from other tumor growths in the finger. A fibroma is likely to be mistaken for the commoner chondromata, but the latter usually develop earlier in life and clinically the growth is less rapid. The hard consistency and smaller size may be of some value in differentiating a fibroma from a sarcoma, but none of these signs are to be relied upon. Ulceration as observed in my own case is unusual, and has only been reported in a few cases of fibrosarcoma. Pain is felt as a rule only if nerve endings are involved in the growth.

Diagnosis can never be certain unless a histological examination be made, and generally this is only possible after surgical removal of the suspected tumor. The most important question in the case of a finger tumor is to decide whether the growth is benign or malignant. A growth slowly progressing for years may suddenly increase rapidly, and then be found to be malignant. Growth may be hastened by a slight traumatism.

Diagnosis of the exact nature of a finger tumor, like that of any other neoplasm, must finally rest on histological examination of the specimen; but a probable diagnosis of malignancy may be presumed from the small proportion of the finger tumors that are benign, from the site, the long duration of the tumor, absence of fluctuation, free movement of the skin over the tumor, and the hard smooth feel of the neoplasm. The tumor usually evolves to an advanced stage without pain, although in Suter's case of fibrosarcoma (traumatic history eight years before) excessive pain was observed for a long time. There was severe pain in only two of the cases of fibrosarcoma reported by Mueller; nor did the tumor until far advanced interfere with the patient's ability to work. In Chisholm's case of true fibroma the constant pain was due to involvement of nerve endings in the tumor.

Treatment of tumors on the fingers can only be surgical. Best results are obtained when operation is early and the tumor strictly localized. In the early stages when the growth is strictly limited or encapsulated, a wide excision with preservation of the tendon, if not involved in the tumor, may suffice; but if infiltration of the sheath and tendon is of such a character that a delicate dissection permits only of incomplete operation, and especially if the presence of malignant tissue is disclosed by histological biopsical examination, then disarticulation or amputation may be indicated. As recurrences of sarcoma of the finger are rather frequent, operative procedure should be radical in a tumor of this type.

In my first case, owing to the tumor being easily disassociated from the surrounding tissue and being encapsulated, with no evidence of malignant histological elements, I felt that excision completely satisfied the conditions. The benign nature of the tumor also would not have justified sacrifice of the finger. In my second case the nature of the growth and its clinical manifestations necessitated more drastic measures.

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Some Observations on the Diagnosis of Carcinoma of the Colon and Rectum*

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Carcinoma of the colon and rectum are not uncommon affections, and yet in these diseases the diagnosis is not usually established until late in their course. For, as in carcinoma of the stomach, the diagnosis in the late stages of these affections is extremely simple, while in the early stages, at that period when surgery offers the greatest hope for relief, it is often extremely complicated. This difficulty arises from the fact that tumors in these regions are slow in their growth, metastasizing late and consequently produce few or no symptoms in the early stages, and are thus overlooked until a later period when some complication arises to point to the true nature of the affection.

Growths of the colon and rectum occur according to the order of their frequency in the rectum, sigmoid, cecum, hepatic and splenic flexures; and next to carcinoma of the stomach, carcinoma of the rectum is the most frequent seat of malignant growths of the intestinal tract.

Of the 129 cases of malignancies of the colon recently reported by Erdmann and Carter (1) the rectum was involved in fifty instances (38.7 per cent.), the sigmoid in thirty-seven (28.6 per cent.); the terminal transverse colon, splenic flexure and descending colon in nine (6.9 per cent.); the terminal ascending colon, hepatic flexure and proximal transverse colon in fifteen (11.6 per cent.), and the terminal ileum, cecum and ascending colon in eighteen (13.9 per cent.).

The following statistics of Gant's thirty-two cases of colonic cancer (2) are of interest.

Number	*Age in Years*	*Location*	*Number of Cases*
2	10 to 20	Cecum	3
4	20 to 30	Ascending colon	1
7	30 to 40	Hepatic flexure	4
8	40 to 50	Transverse colon	2
6	50 to 60	Splenic flexure	3
5	60 to 80	Descending colon	1
		Sigmoid flexure	18
		Total	32

In these thirty-two cases eighteen were in males and fourteen in females.

There were sixty-four cases of cancer of the colon and rectum in our series. The following table presents these cases arranged according to sex and location of the growth.

No. of cases	*Location of growth*	*Males*	*Females*
32	Rectum	21	11
20	Sigmoid	16	4
2	Cecum and ascending colon	2	0
4	Hepatic flexure	2	2
1	Transverse colon	1	0
4	Splenic flexure	3	1
1	Ascending colon	1	0
64	Total	46	18

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Grouped according to age the sixty-four cases occurred as follows:

Years	*No. of cases*
30 to 40	8
40 to 50	23
50 to 60	19
60 to 70	14

In the diagnosis of cancer of the colon and rectum the age of the patient must be taken into consideration as growths in these regions are not ordinarily observed until past the fortieth year of life, though instances occurring in younger persons are occasionally noted. There were eight cases in our group between the ages of thirty and forty years, of which four occurred before the thirty-fifth year.

SYMPTOMS

The symptoms of these affections vary somewhat according to the region involved as well as according to the extent of the growth. In arriving at a diagnosis the following signs and symptoms must be taken into consideration: :

1. Loss of weight; cachexia, anemia, toxemia and dyspepsia.
2. Localized and general discomfort in the abdomen associated with pain and colic of more or less severity.
3. Evidences of obstruction of various degrees of intensity.
4. The presence of a palpable tumor.
5. Alteration in the character of the stools.
6. Intestinal hemorrhage.
7. Ascites and edema of the extremities.
8. X ray evidence.
9. Proctoscopic signs.
10. Blood sugar tolerance test.

1. Loss of weight, cachexia, anemia, toxemia and dyspepsia.—The onset of carcinoma of the colon and rectum is ordinarily insidious and a considerable period of time often elapses before any of the symptoms noted above are manifested. While loss in weight is an extremely common symptom, it rarely occurs in the very early stages of these affections, and is therefore of but little value as an early sign. Progressive secondary anemia also usually appears late, though occasionally it occurs early, caused by slight but continuous bleeding from the bowel appearing in the form of the occult type; attention to the clinical significance of this sign will again be called later. Secondary anemia is so frequently observed as an initial sign of this disease, that whenever the cause of a progressive secondary anemia is not apparent malignant disease of the bowel should be suspected. Toxemia and cachexia are usually late developments and their significance is similar to that noted in carcinoma of other regions of the body. Not infrequently an irregular type of temperature is associated with the toxemia, though this may, however, manifest itself even early in the course of the dis-

ease. Symptoms of gastric disturbance are not uncommonly observed in the early stages of intestinal growths and not infrequently are so prominent that the primary affection may be overlooked. These symptoms consist mainly of nausea, occasionally vomiting, distention and eructations.

It is interesting, too, to note that there is according to our experience an entire absence or a diminution of free hydrochloric acid in the gastric secretion in many of these cases; a finding observed in fifty-five per cent. of the cases of cancer involving organs other than the stomach.

2. Local and general discomfort in the abdomen associated with pain and colic of a more or less severe type.—Growths in the cecum and ascending colon are usually accompanied by some discomfort in the lower right quadrant often present early in the course of the disease, which is increased by active movements of the body, as jarring, etc. This area is often tender on pressure, not infrequently giving rise to an erroneous diagnosis of appendicitis. Severe pain is rarely manifested unless the growth assumes such proportions as to occasion obstruction, which occurs ordinarily late in the course of the disease for, on account of the usual liquid consistency of the cecal contents, obstructive symptoms are less likely to occur. In other segments of the colon, pain and colic are observed far more frequently, for in these areas the solid feces have greater difficulty in escaping through even a less obstructed bowel. In carcinoma of the rectum, pain is most pronounced when the growth is situated low or when it has caused obstruction. It is frequently associated with a sensation of fullness in the lower bowel and pain on defecation with a feeling of incomplete evacuation of the bowel. Sigmoid carcinomata often give rise to fulness and discomfort in the left lower quadrant, which is increased by pressure in this area.

3. Evidence of obstruction of varying degrees of intensity.—Evidence of obstruction as a rule appears late in the course of carcinoma of the colon and rectum. Obstruction may be of the partial or complete type depending largely upon the location and extent of the growth. The presence of obstruction is revealed by the onset of pain already noted, progressively increasing constipation, as well as by careful proctoscopic and x ray examinations. Not infrequently, obstruction is also indicated by the appearance of visible peristaltic movements and patterns extending across the bowel often associated with tympanities.

4. Presence of a palpable mass.—At times, especially when the mass is located low in the colon, signs of acute obstruction with all the symptoms usually noted in this affection may occur and again disappear at varying intervals under treatment before evidences of complete obstruction are revealed. In several instances in our series this sign was the first subjective as well as objective manifestation pointing to the presence of the growth. The presence of a palpable mass is usually a late manifestation of colonic cancer, and especially in those instances in which the growth is located in the cecal region. It is often observed only as an indefinite resistance associated with much spasm. Tumors at the hepatic flexure are ordinarily difficult to palpate, while those in the region of the transverse colon and splenic flexure are less so. Carcinomata of the splenic area and descending colon must be differentiated from renal growths. In carcinoma of the rectum digital examination will usually reveal an early growth in this area. According to Yeomans (4) in 110 cases the tumor was palpable in ninety-nine and only in eleven cases, or ten per cent., was the proctoscopic examination required to determine the presence of a growth, which could not be reached with the palpating finger.

Attention must again be directed to the importance of routine digital examination of the rectum early in all patients manifesting symptoms referable to the gastrointestinal tract. Not infrequently the explanation will become evident at once by this simple method of investigation.

5. Alteration in character of stool.—Constipation is often the earliest sign of carcinoma of the bowel. It may appear suddenly but more frequently its onset is gradual becoming progressively more intense. It is not necessarily dependent upon the degree of obstruction or extent of the growth. Alternating constipation and diarrhea is not uncommon and the stools are frequently ribbonedshaped, short or long, or have the appearance of round balls covered with mucus and blood. There is usually a sudden desire to evacuate the bowel often followed by an explosive unsatisfactory stool, unless the growth is situated near the anus, when there may be only a discharge of slight amounts of bloody mucus. A secretion containing mucus, blood and pus due to the tumor is the frequent cause of moisture of the external anal area. The stools are frequently foul smelling due to the expulsion of degenerated portions of the growth.

6. Hemorrhage.—Profuse hemorrhage is not frequent in cancer of the colon and rectum; though as has already been pointed out, the discharge of bloody mucus is quite common. The stools frequently contain occult blood even in the early stages of the disease; in our experience when this is once observed it usually continues during the entire course of the disease. The presence of this sign in a patient over forty years of age with sudden onset and progressively increasing constipation is extremely suggestive of the presence of this disease.

7. Ascites and edema of extremities.—Both ascites and edema are usually observed as late manifestation in carcinoma of the colon and rectum. The edema of the extremities is not usually extensive and is frequently only transitory disappearing and recurring during the progress of the disease (edema fugax).

8. Röntgen ray evidence.—The x ray is of the greatest help in the diagnosis of colonic growths and is often the only means of pointing to an early diagnosis. According to Carman seventy-five per cent. of tumors of the colon can be detected by means of the x ray, the most important evidence in this direction being in the form of a filling defect and the presence of obstruction. Rectal growths are, however, frequently overlooked by the barium enema.

The opaque enema must be observed fluoroscopically and plates should also be taken. The x ray is not of as great value in the diagnosis of early carcinoma of the cecum as it is of other portions of the colon. The filling defect is often unilateral or may have the appearance of a concentric obstruction. Great care must be exercised to be positive of the

constancy of these findings. In a special instance which has come under our attention in which a capable röntgenologist made a diagnosis of carcinoma of the ascending colon, and in which the diagnosis was confirmed by all the usual methods practised by röntgenologists, the filling defect and partial obstruction were found due to the dragging down of the bowel by adhesions, connected with an inguinal hernia. It must also be borne in mind that spastic and reflex conditions may lead to errors in diagnosis. It is not uncommon to observe a large persistent filling defect in a definite area of the colon simulating carcinoma and continuing over a period of hours, which will disappear when atropine is administered in full doses.

9. Proctosigmoidoscopy.—By this method growths in the rectum and sigmoid may be visualized and the size, position, motility, as well as ulcerations and adhesions to neighboring organs, determined. In all chronic disturbances of the bowel, no matter what their nature may be, this method of examination should never be neglected. When on palpation of the rectum a growth cannot be detected, it is often possible even to visualize a mass in the bowel by means of this method of examination, as far up as the distal sigmoid.

10. Blood sugar tolerance test.—According to Friedenwald and Grove (5) there is present in carcinoma of the gastrointestinal tract usually a rather characteristic curve of sugar tolerance, which differs somewhat from that observed in carcinoma of other regions of the body. The curve of this affection usually presents a high sugar content even in the fasting state followed by an initial rise up to 0.23 per cent. or higher within forty-five minutes after the ingestion of the dextrose remaining at this level for at least two hours and rarely at any time during this period falling below 0.2 per cent. This test is rather distinctive so that it may render valuable assistance as a means of differential diagnosis between carcinoma and other diseases of the gastrointestinal tract. The value of this test is illustrated by the following case.

Case.—C. S. I., male, aged fifty-four years, had been affected with indigestion for four months. At the onset, he was taken with an acute attack of pain in the lower right quadrant of the abdomen, and a diagnosis of acute appendicitis was made. Since then there had been constant indigestion with general discomfort in the abdomen, pressure, distention, loss of appetite, eructations, extreme constipation, and loss of thirty pounds in weight. On palpation a mass was noted in the right lower quadrant with extreme tenderness in this area. The blood sugar tolerance test revealed a definite cancer curve. At operation by Dr. J. M. T. Finney a carcinoma of the cecum was revealed, and resection was performed; no metastases were noted. The patient made a good recovery, and when a subsequent blood sugar tolerance test was made two months following the operation, a perfectly normal curve was revealed.

In drawing our final conclusions concerning the significance of the various signs and symptoms of cancer of the colon and rectum, it is quite evident that many are general manifestations frequently present in other intestinal affections, and not characteristic of these conditions alone, while those which are more characteristic are usually late developments. On this account the late diagnosis of cancer is rendered exceedingly simple, while on the other hand, the early diagnosis is usually difficult.

In reaching definite conclusions it is, therefore, important to rely not upon a single sign or symptom, for there are no pathognomonic signs of early cancer, and only after a critical review of the history, physical examination and study of the symptoms, including examination of the stools can definite conclusions be drawn. We must take into consideration in our diagnosis the age of the patient, the history of the affection (that is, its onset in the midst of good health), loss of weight, anemia, dyspeptic signs; the local and general discomfort in the abdomen associated with pain of a colicky character, evidence of obstruction, the presence of a palpable mass, and intestinal hemorrhage. In addition, we have the evidence afforded by the digital and x ray examinations, as well as by the proctoscope.

But we rarely have all the signs present in early cancer of the bowel and in most instances usually there are so few manifestations that the diagnosis may be impossible, while in others the early recognition may be masked by the presence of an atypical symptomatology. The general condition of the patient may be extremely good in the early stages of the disease, remaining so even until the first appearance of obstructive signs. It is also a well recognized fact that palpation of these growths (not including those in the rectum) is ordinarily extremely difficult in the early stages, and this difficulty may continue until obstructive signs arise due in part to the pressure produced by the hard fecal masses against the tumor mass.

Evidence of stenosis of the bowel, usually the first alarming manifestation, occurs ordinarily late in the course of the disease and increasing constipation which is frequently an early sign may not appear until a fairly marked degree of obstruction has been produced; though on the other hand, it may arise entirely independently of the obstruction in the course of this affection. A further difficulty may occur in that carcinoma of the bowel may appear in individuals previously constipated for years, and in consequence the onset of this disease may be entirely overlooked.

It is also important, too, to remember that this affection usually appears at the age in which arteriosclerotic changes have already manifested themselves on account of which there are retrogressive changes and impaired metabolism with loss of strength and anemia presenting symptoms often akin to those of cancer. Further difficulties often arise by the occurrence of intestinal cancer in patients affected with some preceding affection such as diabetes, Bright's disease, cardiac affections or chronic infections; on account of which there may be marked emaciation, loss of strength and intestinal disturbance. Finally, there still remains another group of cases, the latent forms in which symptoms are not revealed until late in the course of the disease.

Again cancer of the bowel may occur in young individuals. Erdmann and Carter report a case at the age of twenty-two and Yeomans's six cases between the ages of ten and thirty years; and we have had one of cancer of the rectum under our care at the age of twenty-five years. The diagnosis in these cases is often extremely difficult.

Cancer of the bowel must occasionally be differentiated from other diseases associated with loss of flesh, such as pernicious anemia, serious forms of colitis, tuberculosis of the bowel, diverticulitis, prostatitis, hemorrhoids and even fecal impactions.

As we have attempted to point out the difficulties encountered in arriving at an early diagnosis of intestinal cancer are at times extremely great and in as much as surgery offers the only cure and then only when the diagnosis is made early the question of early diagnosis is of paramount importance. As yet, it is frequently impossible to reach very definite conclusions at the early stage, except in rare instances. But it is extremely important to view with suspicion all patients over forty years of age who present a progressively increasing constipation associated with the passage of blood in the stools even though this blood be but of the occult type. In all such instances routine physical including digital as well as proctoscopic examinations should be made and if necessary these procedures should be augmented by thorough and repeated x ray studies.

It is evident, therefore, that only by means of most careful investigations into the signs and symptoms, together with painstaking examinations, that we can hope for an early recognition of cancer of the colon and rectum at that period only when a radical cure may be expected from surgical intervention.

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The Effect of Sunlight on Growth and Development

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In an experiment undertaken at the University of Maine in the summer of 1924, a clutch of about 250 chickens was divided into six lots. All of these were housed in a greenhouse and received the same food and other treatment (chick grain, dry mash, sour milk, and rock grit, water and dust baths) except that lots C and D had green food in addition and lot F had a small amount of codliver oil added to its food. Lot A ran out of doors during the day; lots B and C were exposed for twenty minutes each day to the light of a mercury vapor arc in quartz; lots D, E, and F received light only through the glass roof of the greenhouse.

At the end of four weeks the chickens in groups D and E had less appetite and were less vigorous in their movements than those in the other lots. Those in lot F seemed to have less appetite than those in lots A, B, and C. In other words, only the chicks in groups A, B, and C were normal in every respect.

These differences became more marked at the end of the fifth week. The chickens in lots D and E were evidently suffering from "weak legs," were unable to stand squarely on their feet and had to use their wings for additional support when moving about. Gradually, their nails became long and curled, the bills soft and the plumage ruffled. At the end of two months the chicks in the first three groups were nearly twice as tall as those in lots D and E and were strong and sturdy in every way. In the last thirty days of the experiment the chicks in lots A, B, and C gained twice as much in weight as those in lots D and E.

The chickens in lot F which received the codliver oil had poor appetites and grew so slowly at first that they remained throughout of smaller size than those of lots A, B, and C.

X ray photographs showed that in lots A, B, and C the leg bones were long, straight and well calcified. In lots D and E the bones were short and weak for the deposit of lime and phosphorus salts in the bones were very deficient. In lot F, the bones were well calcified but short.

The development of secondary sex characters paralleled the development of the bones. It is also worthy of note that while but one chicken died out of all those in lots A, B, and C, there were fifteen deaths among the chickens in lots D and E.

It would appear that there was some environmental influence acting on the chickens in lots A, B, and C that was not acting upon the chickens in lots D and E. As the environment was the same in every respect except the light that they received, there must have been something taken from the light as it passed through the glass roof of the greenhouse.

Wherein lies this difference? Sunlight contains heat, visible light and rays invisible to us, known as ultraviolet, extending down to wave lengths of about 0.29 microns. Glass transmits some of the heat, most of the visible light and ultraviolet down to wave length of approximately 0.31 microns. This very narrow band of sunlight between wave length 0.29 and 0.31 microns does not, then, pass through glass, but this light, together with other wave lengths down to a little less than 0.20 microns, does pass through the quartz walls of the mercury vapor arc lamp.

The chickens in lots D, E, and F, then, did not receive light of shorter wave length than 0.31 microns, while lot A received light to 0.29 microns and lots B and C received light down to 0.29 microns in wave length. As the chickens in lot A developed normally it is therefore evident that the difference in the physiological effect of the light on the various groups must be ascribed mainly to this narrow band, a band so narrow that, by analogy, it might be described as

a very pure spectral "color" lying at the extreme range of sunlight.

Why are the antirachitic properties of sunlight restricted to this narrow band? Because, while visible light readily passes through unpigmented protoplasm, in this particular region (and beyond it, on the short wave length side), light is very strongly absorbed by protoplasm and, as was stated by Grotthus over a century ago, only the light that is absorbed can bring about photochemical change.

"Visible light" is valuable to us, because when falling on the pigmented rods and cones of the retina it enables us to see. The energy of sunlight in both the heat and ultraviolet regions of the spectrum is absorbed by unpigmented protoplasm and it has been found by experiment that these rays are necessary for normal growth and development.

Plants bend toward the light and they are sensitive to lights of extremely low intensities if only the light acts for a sufficient length of time. Bunsen and Roscoe, studying the action of light on a photographic plate, found that a constant degree of blackening would be produced by any intensity of light if only the time of exposure was reciprocally adjusted so that the product of I times T would be a constant. Blaau found that the same was true for the bending of the oat seedling, over an enormous range of intensities. As this constant blackening of the photographic plate is unquestionably due to a constant amount of photochemical product it would appear that the light in like manner produces also a photochemical product in the plant. The researches of Blaau indicate that response occurs only when the amount of the photochemical product reaches a certain minimal value.

Only the very tip of a seedling is light sensitive, but the bending occurs, always, a short distance from the tip. It is evident that there must be a transfer of the photoproduct from the point of origin to the point of effect. If we cut off the tip, the plant is "blind." But if the tip is stuck on again, in the original position with a thin layer of a ten per cent. solution of gelatin, though the organic continuity is broken, bending occurs. This makes it seem probable that it is not stimulus directly but a water soluble photochemical product that diffuses through the gelatin and occasions the bending. It is likely, even in the uninjured plant, that bending occurs only as the photoproduct diffuses to the bending region.

The extreme sensitiveness of plants to light would indicate that only a very small amount of the photochemical product is necessary to produce bending, but whether this product, diffused to the bending region, causes the changes that result in bending, or whether it initiates a chain of chemical changes so that the effect is amplified, we do not know.

Two things occur in the growth of plants: an increase in the total amount of substance and a modification of substance into structural elements, or differentiation. These are, to a degree, antagonistic, for as differentiation occurs, growth is prevented. The transfer of the photo product, then, formed in greater amount on the lighted side and diffusing most readily downward along the vessels, causes a differentiation of tissues and checks the growth on the illuminated side while on the other side increase in volume still occurs. The plant therefore is bent to the light.

Light influences the rate of growth but does not control it, for while most plants grow most rapidly at night, they also continue to grow during the day. Most plants cannot grow and develop properly in total darkness. A microscopic examination of their tissues shows profound modification in the cell structure. They do not show the same degree of morphological differentiation as is found in corresponding organs of the same age that have been grown in the light. They are more nearly in an embryonic condition.

On the other hand too great an exposure to light may result in a premature differentiation producing dwarfs; or the whole process of development may be thrown out of order, producing monsters.

Sachs, after extended experiments concluded that there were specific formative materials for the various organs of a plant and that these were not necessarily formed in the place where they were to be used. MacDougal states that the physiological effects of exposure to light may be long delayed and may even carry over into a succeeding season. Impulses may even be communicated to organs not formed at the time the stimuli were received.

The mechanical structure of a plant or of a bone is laid down in accord with the mechanical stresses put upon it. Koch states that this is true of a bone, even to the minutest detail. Even after a bone is formed, a fracture, or even a continued change of posture will alter the structures already laid down, through solution and redisposition until the pattern corresponds to the changed condition.

The deposition of bony material in a developing child is but a process of tissue differentiation and in the absence of ultraviolet light it does not normally take place properly.

It is known that ultraviolet light does not penetrate far enough to reach the bones. It is absorbed at and near the surface of the body and its stimulating action must therefore be transmitted in some way to the developing bones.

We have seen how in plants which have no nerves, the stimulus produced by light seems to be transferred through the medium of a water soluble photochemical product, to places where differentiation occurs. In animals the same thing seems to be true in many cases, and it is also true that the product, formed in plants or other animals, may be taken in with the food. We know that codliver oil is antirachitic; and certain other substances, as lettuce, cottonseed oil or dried milk that have been exposed to ultraviolet light, have the same property. At least the diet stimulates normal differentiation.

When we expose a photographic plate in the camera, photochemical changes occur in some of the silver salts, bringing them into a developable condition. We say the light has produced a "latent image." This is not the actual image that is produced later, upon development. This is produced by the reduction of the silver salts, while the developer is oxidized. This exposure may be made months before the plate is developed.

A baby's arm may be exposed to ultraviolet light of a suitable wave length. The photochemical change produced by the light in the tissues or in the blood may be compared to the latent image on the plate.

When this photochemical product is brought into contact with embryonic bone tissue the latent image is "developed" as chemical interactions that have to do with the metabolic changes that occur in connection with the differentiation of bone tissues. The radiated foods in the experiments of Hess and Steenboch may act in a like manner. Physiologists have named substances like those contained in cod-liver oil, which catalyze certain physiological processes, "vitamines."

Whatever theories are proposed to explain the reactions, the fact remains that most plants and animals, including man, are as dependent upon the ultra-violet energy of sunlight for normal growth and development as they are upon the heat energy of sunlight. Other physiological functions besides bone development are interfered with when the organism is deprived of this kind of radiation. The body is more susceptible to the inroads of disease. A well sunned body furnishes a high degree of protection against tuberculosis and the progress of the disease, even after it has been contracted, is often quickly and permanently checked. Window glass has unquestionably accelerated the speed of civilization, but man has paid the price.

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New Clinical Aspects of the Steinach Operation

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In presenting another paper on the Steinach method of socalled rejuvenation, I have several purposes in mind. First of all, after having operated on 114 patients, partly—in the sense of Steinach—for the purpose of retarding age, partly to influence the endocrine system, I feel justified in looking back on the results in general and giving a survey of all my experiences. I shall discuss technic, indications, and contraindications, and in order to enable the practising physician to form a proper judgment of the therapeutic value of the Steinach operation, I shall, on the basis of these 114 cases, indicate the possibilities as well as the limitations of this procedure, reporting both failures and successes. Some of the patients have been observed for over three years and a judgment as to the permanence of the results is therefore well justified. I have taken great care to judge these results very conservatively, underestimating rather than overestimating them in doubtful instances.

In a paper like this, it is not quite possible to follow the usual rules guiding medical publications, since the practice of the Steinach methods does not exclusively concern people suffering from a definite disease. In the majority of cases, these patients come to seek relief from symptoms of premature or physiological senility with a decline of vitality. It is, therefore, quite difficult to judge the value of this treatment, because the patients will not as readily undergo repeated examinations as would a sufferer of some welldefined disease. Besides, the treatment, especially in women, is practically always ambulatory and a majority of patients live far away, so that written reports often have to replace physical examinations. This accounts for the lack of exact clinical data. But if we hear over and over again that certain subjective symptoms have been ameliorated in a very identical way, we are justified in attributing the effects to the cause.

In my opinion, the frequency and regularity of these subjective improvements lent them already the strength of an objective proof. It is only necessary to compare with my own reports those of Cardenal, Chetwood, Haire, Lichtenstern, Sakaki, Sand, Schmidt, Vecki, Walker and Cook, Wolbarst, and others.

In order to gain as many objective data as possible I have followed these rules:

1. Wherever possible, frequent reexaminations were made in order to determine objective changes. Thus, blood pressure, hemoglobin and skin reaction were examined, changes in distribution and color of hair noted, weight controlled, and physical strength measured by means of the dynamometer. Occasionally a specialist determined the eye and ear status.
2. By sending out questionnaires, written reports were solicited, especially from the intelligent and critical patients and from colleagues on whom I had operated.
3. Where possible, reports from family physicians were requested regarding the patient's condition.
4. Occasionally, relatives and friends were asked to report their observations of changes in the patient.

The literature on the clinical aspect of the subject contains a considerably larger number of successful reports than unsuccessful ones, and it is evident that any antagonism toward Steinach's work and the practice of the operation that bears his name, is not so much based on negative clinical observations as it is directed against the echo which the entire subject found within the laity, and not the least against the word rejuvenation itself. The attacks of theorists and pathologists are naturally concerned with Steinach's theories and explanations of his clinical results with which these laboratory workers have no or too limited an experience.

Steinach's theory is that by ligating the vas deferens, the discharge of spermatozoa is interfered with. The result is a back pressure into the testicle and a pressure atrophy of the seminiferous apparatus. The place of the disappearing seminal cells is taken by the proliferating interstitial (Leydig) cells, which, in Steinach's opinion (corroborated by Athias, Kuntz, Haberland, Lillie, Sand, and others and especially Lipschuetz), are the principal inner-

secretory organs of the testicle. Their increasing number produce an increased output of testicular hormones with subsequent tonic effect on the rest of the endocrine system.

In a recent publication, Schinz and Slotopolski (1) disagree decidedly with this theory, but in contradistinction to other opponents of Steinach's theory, admit a favorable clinical effect of vasoligation. Their explanation is (like Stieve's and others) that the back pressure destroys the seminal epithelium and that the absorption of these disintegrating cells is responsible for this clinical result, either acting directly on the organism or indirectly through other endocrine glands. It is not my intention here to try to decide this question, which, after all, is not a clinical but a histological and biological problem. However, considering the literature and Steinach's original transplantation experiments and also deductions from my own clinical observations, the greater probability seems to rest with the Leydig cell theory.

Another recent article on the subject is by Hans Steindl (2). His conclusions are of little value, since he has not used the Steinach operation for its principal indication: senility. Steindl has, for instance, operated in cases of cancer, where only temporary benefits could be expected, and these were fully obtained. He also operated on patients with psychic impotence, which is no indication at all, and —*experimentis causa*—cases of Parkinson disease, with naturally not more than doubtful or passing benefits. On the whole, Steindl has fully confirmed all that has been claimed for the Steinach operation in those cases that he selected for operation. In spite of that, he has come to general negativistic conclusions. This fact seems to me of more value for a criticism of the author's psychology than of the merits of the Steinach operation.

It is not the purpose of this paper either to review the entire literature, which has already assumed impressive proportions. For those interested deeply enough in the subject, I would only mention that the recently published book by Peter Schmidt (3), as well as the book by Norman Haire (4), offer quite a complete and practically up to date bibliography, also Paul Kammerer's (5) book on the prolongation of human efficiency.

The problem of rejuvenation is likewise touched upon in two other books dealing with the testicle and its functions. The first one is by Alexander Lipschuetz. Here Steinach's original experiments find fullest recognition and confirmation. The other book is by Max Thorek (7). It merits becoming a standard textbook on this particular subject. Both books contain a splendid bibliography of the entire field.

Before I come to my case reports, I would like to describe a few points in the technic that I have used in the majority of my cases. I always do the operation on the scrotum. There is no difficulty in rendering these parts aseptic. The pubes and scrotum are carefully shaved. The field of operation is thoroughly cleansed with soap and sterile water, dried and wrapped in sterile gauze until the moment of operation. No iodine or alcohol is used because I have frequently found that the patient complained of this application much more than of the actual operation. With this method of preparation, I have never seen even the slightest infection. The operation is performed in such a way that the vas, which can easily be felt through the skin of a relaxed scrotum, is brought close under the skin by manipulation with the finger. In this position, it is held by the assistant. The skin is anesthetized with one per cent. novocain and one to ten thousand adrenalin and then incised. The vas is readily found and is carefully isolated and stripped of accompanying structures. In a short and contracted scrotum, the vas cannot always be felt and not easily be brought to the surface. In those cases I have found it useful to apply a sterile hot towel for five minutes over the scrotum. This causes sufficient relaxation to isolate the vas with the finger. In cases where this easy access to the vas cannot be accomplished, the cord is exposed by an opening long enough to allow two fingers to enter the wound. With these two fingers the vas is differentiated and then seized with a toothed forceps. By careful dissection with a blunt forceps and gauze, the vas is isolated without injuring any accompanying bloodvessels or nerves. After the organ is thus thoroughly stripped for a distance of one or two inches, it is ligated with silk in two places and a piece between these ligatures about one inch long is resected. This, at least, is the most frequently used technic. The main object is to prevent reopening of the vas and recommunication of the two ends. A double ligature of the lower stump is advisable. In order to use as little foreign material in ligating as possible, I frequently do the following: I ligate above with chromic catgut, since reopening of the upper stump plays no part in the effect on the testicle. The lower ligature consists of medium sized, doubly sterilized silk. I cut the vas near the upper ligature and the piece between this cut and the lower silk ligature is bent down in a look and the same silk ligature is used to ligate the vas a second time. Again using the same thread of silk, this lower stump, now a loop, is sewed into the surrounding tissue to preserve testicle suspension. A few catgut stitches close first the opening in the tunica, then in the skin, after all possible bleeding has been stopped. A sterile dressing is kept in place by a large suspensory, which is left on for about eight or ten days. After that time the incision is completely healed. With this technic the operation has always been absolutely painless and a complete surgical success.

Unfortunately, I have had more than one opportunity to see unsatisfactory surgical and negative endocrine results, due to a wrong technic. I therefore believe that a painstakingly correct technic is essential for success.

Up to the time that this paper goes to press I have, as stated above, operated on altogether 114 patients. Some of them are decidedly too recent to warrant an opinion regarding results. In these cases, as well as in all the instances where I was unable to communicate with the patient, I will only mention the character of the case briefly in the attached tables, and report in more detail only twenty of those cases that seem distinctly instructive and characteristic in one way or another.

In August, 1922, I described eight cases in detail (8). In November, 1922, I reported twenty-two cases, including further details on the first eight cases (9). I would like to classify the results the same

way as I did in 1922, and may be allowed to repeat this classification here with a slight modification:

1. Positive, if there was clear evidence of an objective beneficial effect.

2. Subjectively positive, if the patient claimed an improvement of his symptoms only.

3. Doubtful, as to clinical interpretation.

4. Negative, if no changes at all occurred attributable to the operation, after a period of six months or more.

Regarding the last group I would like to mention that some of the cases reported as negative may yet show results at some later date. From verbal and written communications of Professor Steinach, who does not himself publish any results, I have learned that in several cases definite improvements (especially regarding sexual potency) occurred only after a year and even considerably later. (Vide my own Case VI.)

I omit from the list of the twenty-two cases those eight cases which I could not follow up. Of the remaining cases these are the important ones:

Case III.—College professor, aged fifty-five. Reported positive seven months after the operation. Since then the patient has improved still further. He was last examined in December, 1924, exactly three years after the operation, and was found to be in excellent general health. His improvement in physical and mental strength and endurance has continued and his former complaints (unusual tiredness, rheumatic pains, mental depression, frequent urination), have not returned during the three years. He has kept his gain in weight and his hair has assumed a slightly darker shade. There has been, however, no change in his sexual desire or ability, both of which play a minor part in his life. The operation was done unilaterally and the result certainly refutes the theory that the operation produces a merely passing stimulation.

Case VI.—Contractor, aged fifty-eight. Was reported strongly positive five and a half months after a unilateral ligation. Nearly three years later the patient reported a continuation and further increase of improvement. He described his physical and mental strength as "very good" and "as good as ever," his appetite and digestion as splendid, his sexual ability as very good. He had gained ten pounds, and was, on the whole, three years after the operation, just as satisfied and apparently more so, than when the first report on his case was made. Although no reexamination could be made recently, I feel justified from the written report, knowing the patient's critical mind, to regard his case as evidence of a lasting benefit. This lasting benefit is still more evident in the following case:

Case VIII.—Editor and former clergyman, aged fifty-eight. Unilateral operation March, 1922. Was reported positive (except sexually), five months after operation. This very intelligent and highly educated man wrote in December, 1924, two and a half years after operation, a letter from which the following lines are taken:

"This past year has been a strenuous one for me. I have worked hard physically and mentally—usually ten to fourteen hours a day including half the Sundays. Have had an unusual amount of mental strain to bear, but have come through in splendid shape. Am sure the operation made this possible for me."

He further reports his digestion to be better and that his formerly frequent (pituitary) headaches, which were gone already five months after operation, have not returned. He has grown somewhat balder. His sexual ability has not improved.

He says, "I am willing to attribute all I have mentioned to the operation, since there is nothing else that could have caused the change." His hopeful outlook on life is shown in the last sentence of his letter, written on the last day of 1924.

"I have a hard year of work ahead, and it will be my sixty-first year on earth. It should be my best year and I think it will be."

Comparing this frame of mind and general state of health to the one of premature senility in 1922, it is rather difficult not to be fairly enthusiastic about the result accomplished in this case.

Case XII.—Naval officer, aged fifty-six. Was operated on in April, 1922. The diagnosis was angina pectoris and beginning arteriosclerosis. The case was not classified when first reported. Twenty-six months after operation the patient stated that his general health was good. His attacks of angina were still present but not so bad, his blood pressure somewhat lower than before the operation, his sexual ability fair and his digestion improved. He recently graduated from a college and is convinced that he has derived benefits from the operation. The improvement in this case is only moderately positive but of prolonged duration.

Case XVII.—Clerk, aged fifty-five. On June 1, 1922, Dr. H. performed a laparotomy and found an inoperable cancer of the head of the pancreas. Simultaneously, I performed a bilateral vasoligation in the hope of checking the steadily increasing cachexia. Two months later I was gratified to find the cachexia at a standstill and the patient's weight stationary. Four months later I was informed that in spite of extensive traveling, the patient was still holding his own. The result in this case was classified as doubtful. I have heard that the patient has since died but it seems to me that the operation somewhat retarded the fatal issue.

Case XVIII.—Physician, aged sixty-seven. Reported partially positive five weeks after a unilateral operation had been performed on account of beginning senility and arteriosclerosis. One and a half years after operation the doctor wrote that he had gained some weight, that he had as much strength and endurance "as he ever had," feeling no fatigue after a strenuous game of golf. The color of his hair had not changed but some new hair had grown on his head. His sexual ability is "on the wane." His memory is unchanged and his ambition as good, if not better than it was. His blood pressure before the operation was 195 with a pulse pressure of 85. One and a half years after operation he reports it as 180 and pulse pressure 60. He feels that the operation has done him good. I would classify his case as positive showing moderate but certainly not transitory benefits.

Case XX.—Dyer, aged thirty-nine. The case was diagnosed as hypogonadism and was reported positive five weeks after a unilateral operation; has not improved any further but has kept his gain when last examined in November, 1924 (twenty-seven months after operation). The erections had become stronger

but the ejaculations were not influenced. His general health had remained good. He has derived a lasting moderate benefit.

Drawing conclusions from the study of these cases, I can briefly say that those patients reported positive in 1922 are still positive today as far as the observations could be continued, the improvement even having increased in some of them. One negative case remained negative, and doubtful cases (IX and XIV) remained doubtful. (Vide tables.) The most important point is the definitely established fact that in none of these cases one can speak of a temporary benefit derived from the operation. I feel justified, since no relapse has occurred in over two or three years, in pronouncing these cases as permanently benefited. I shall be able to further strengthen this conclusion with a number of other cases not yet reported.

Case XXIII.—Salesman, aged fifty. Principal symptoms and complaints: For many years attacks of depression. Since two or three years continuous state of depression.

A diagnosis of manic depressive insanity was made. In September, 1922, a unilateral operation was done. One month later his depression had disappeared. He was perfectly comfortable. Had gained ten pounds in weight. His blood pressure, before the operation, was 155/100, and after the operation was 120/85.

Examination on April 3, 1923, seven months after operation: The patient remained well until attack of influenza in February, 1923. Since then has had two attacks of depression. Semen contained spermatozoa. On urgent request of the patient another bilateral operation was performed on April 9, 1923 (Case XXXVIII). On the side of first operation, the ligature was placed below the scar; on the right side, multiple hydrocyles of the cord were removed at the same time with the ligation. An immediate improvement resulted with a drop of blood pressure to 115/80. However, another moderate depression occurred three weeks later and since that time until now (two and a half years after operation) there have been occasional attacks of depression lasting from one to three weeks with a perfect state of wellbeing in between. Organotherapy by mouth and x ray treatment to the pituitary and the thyroid have failed to check the attacks of depression completely, but they are decidedly less intense with no accompanying suicidal tendencies. I feel that the result of the two operations is a partial one. The manic depressive insanity has not been cured but the constant state of depression has been changed into a condition of years ago, attacks of depression being less deep and less frequent. The result was partially positive.

Case XXIV.—Laborer, aged thirty-five. Diagnosis of impotentia sexualis with hypogonadism was made. Vasoligation was performed twice on the right side, first in September, 1922, with an immediate sexual stimulation and distinct general improvement. Six months after the operation, he had gained weight and felt physically and mentally stronger but the sexual stimulation had somewhat subsided. A second operation was performed December 6, 1923, on the same side nearer to the epididymis. The vas was found extremely atrophic. A small part of it was resected and examined microscopically. The report of the pathological laboratory was as follows:

"Microscopic examination of sections made both longitudinally and transversely show a tube, the inner lining of which consists of a layer of epithelium of the low columnar type, which epithelium is supported by a rather dense laminated hyaline connective tissue. In sections made the long way of the specimen there are from three to five spermatozoa found in each section."

Since the resected piece of the vas was situated below the first ligature, this examination shows that a regeneration of the spermatogenetic tissue had taken place within the fourteen months that had elapsed since the first operation. This finding is in accord with those of Steinach's animal experiments. In February, 1924 (two months after operation) the potency was again distinctly improved, intercourse normal. Last examination March, 1925, (one and a half years after the second operation); the old disability had returned.

In spite of temporary improvement, I am inclined to call the result negative. I believe that psychic inhibitions are mainly responsible, the endocrine stimulation or possibly autosuggestion having succeeded to overcome these inhibitions only temporarily. Psychoanalysis was not advised as the low intelligence of the patient did not seem to warrant such course of treatment. Here one could indeed speak of a temporary result.

Case XXXIV.—Laborer, aged fifty-eight. Principal symptoms and complaints: Felt "getting old," weakness of eyes, easily fatigued. Acne for many years in face and on back. Weight 137 pounds. Pulse 78, Blood pressure 140/95. Strength in right hand measured by dynamometer 55, left 75. Prostate slightly enlarged. The diagnosis was incipient senility, and acne gangrenosa.

A bilateral operation was done in March, 1923. Last examination, March, 1924 (one year after operation) generally well and fit for work. No fatigue. Acne practically disappeared. Pulse 68. Blood pressure 125/85. Dynamometer: right 65, left 85. Weight 136 pounds.

The result was positive. (The cure of the acne is especially instructive on account of the known connection between this affection and endocrine gonadal function).

Case XLVII.—Painter, aged forty. Principal symptoms and complaints: Very nervous, easily exhausted, unable to work as formerly. Decline in sexual potency. Frequent emissions, depressed, restless and worried. Physical examination: Negative. Weight 155 pounds. A diagnosis of premature senility and sexual neurasthenia was made. A unilateral operation was done August, 1923.

One month later there was distinct improvement, much better balanced. Fewer emissions. Was working regularly for first time in many months.

Last examination: June, 1924 (ten months after operation). In excellent health. Weight 169 pounds. Hair and beard growing stronger. Nails not as brittle as formerly. Enough selfconfidence to contemplate marriage.

Case LVII.—Dramatic critic, aged sixty-seven. Principal symptoms and complaints: For eight to ten years gradually decreasing working ability. No sustained effort possible. Easily fatigued. Often depressed. Decline in sexual strength. No other

physical complaints. Pulse 76. Blood pressure 125/75. Weight 141½ pounds. Skin reaction faintly red. Testes somewhat undersized. A diagnosis of incipient senility was made. September, 1923, a bilateral operation was done.

This patient, whose business it is to be critical, began to improve about one month later, the improvement steadily increasing.

In March, 1924 (six months after operation), patient felt more "alive and buoyant." His mind was clearer and more resilient, he was able to work quicker and without being fatigued. His physical condition was about the same as before the operation. His sexual strength had decidedly improved. His wife said "he is decidedly less nervous."

January, 1925 (one year and four months after operation), patient was even better than one year ago. He felt young, energetic and cheerful. During the end of the theatrical season, patient was able to do his work only with great effort and with the help of tonics. Last year and now, he felt at the end of the season "fresh as in the beginning." He became normally tired after a strenuous day but recuperated much quicker than before the operation. His formerly pale complexion became pink and healthy. His farsightedness had improved so that weaker glasses have been prescribed by the eye specialist. His hair was growing more rapidly. His digestion was better than last year. He remained sexually distinctly improved. His weight and blood pressure remained normal.

The result was positive (considering that this man, who was not at all inclined to be enthusiastic, was so firmly convinced of the great benefits he derived from the operation, I regard him one of the most successful cases where a real "prolongation of efficiency" and a real "retardation of age" has been accomplished, not only temporarily but more pronounced in the second than in the first year after the operation).

Case LVIII.—Physician, aged sixty-two. He had had a general decline for the last eight years. Lack of ambition, memory failing. Frequent indigestion. A diagnosis of incipient senility was made.

September, 1923, a bilateral operation was done. Last report written December, 1924 (fifteen months after operation), "first benefits felt six months after operation. Slight increase of weight and physical strength and endurance. Digestion better, hair getting gray slower than before the operation, skin less wrinkled, no change in memory but slight increase in ambition and power of endurance. General outlook on life somewhat brighter than before. Pain due to muscular rheumatism considerably less, also 'epigastric distress' improved."

Considering the fact that this patient was a well observing physician I have given his report in more detail. He concludes as follows: "In my opinion it is an operation with no disadvantages (no ill effects whatsoever) and a good many advantages. (The beneficial effects are quite distinct and numerous.) Thus every man between fifty-five and seventy or even older, who begins to feel old age creeping on, should not hesitate to have it done."

Case LX.—Veterinary surgeon, aged sixty-nine. There was a general decline, especially in memory and sexual ability for the last three years. Had been losing weight steadily (had weighed two hundred pounds). For one year frequent urination and also frequent headaches. On two examinations, on October, 1923, and October 9, 1923, his blood pressure was between 200 and 250 systolic and between 100 and 130 diastolic. Pulse 80. Weight 166½ pounds. Prostate small, hardened. A diagnosis of incipient senility, with hypertension, was made. October, 1923, a unilateral operation was done.

December, 1923 (two months after operation), better sense of wellbeing, more energy, less languid. Patient had a serious accident falling down a long flight of stairs five weeks ago and had an attack of influenza afterwards. Asserts that he recovered unusually quickly. His headaches have disappeared. His frequent urination has improved. Weight 168¼ pounds. Blood pressure 190/100.

May, 1925 (one and a half years after operation), patient had further improved. He had no complaints. His digestion was better. Also his memory to a certain extent. He had been much more active which probably accounts for his slightly lower weight, 164 pounds. Blood pressure 190/100. Although his sexual ability was not markedly improved, he felt more confident in this respect and intends to get married. (In cases like this, I consider it imperative to impress very strongly on the patient the necessity of refraining from sexual exertions. In this case a second vasoligation on the other side should be considered in the near future.)

Case LXIV.—Physician, aged sixty-six. There had been a general decline of strength, memory, and especially sexual ability. Gradual loss of weight. Examination generally negative. Blood pressure 118/85. Pulse 82. Weight 177 pounds. Urine contained faint trace of albumen and occasional hyaline casts. Hemoglobin 70 per cent. A diagnosis of incipient senility was made. November, 1923, unilateral operation. A large hydrocele was operated upon at the same time (Volkman operation).

April, 1924 (five months after operation), subjective improvement. Physically stronger and decidedly more energy. No sexual improvement. Blood pressure 120/80. Weight 184½ pounds. Hemoglobin 80 per cent.

October, 1924 (eleven months after operation), patient has remained generally well, but his psychic harmony was greatly disturbed by discontent and worries. No further improvement. Weight 178½ pounds. Blood pressure the same. Result doubtful.

Case LXVI.—College professor, aged fifty-four. There had been a general decline for the last two years. Pronounced loss of energy, mentally as well as physically. Since a few months, urination at night. Sexual vitality always low. Further decline of libido and erections recently. General mental depression. The diagnosis was asthenia, premature senility. December, 1923, a bilateral operation was done.

January, 1924 (six weeks after operation), felt generally somewhat more energetic. Weight 127½ pounds. No distinct changes on physical examination.

December, 1924 (one year after operation), no changes. Suffering from a lack of energy and endurance. Had frequent headaches and is pretty badly depressed. An enlarged prostate had been diagnosed by his physician and since massage had no effect, he

considers x ray treatment or removal. He had kept his weight. His complexion was said to be much improved. Blood pressure had remained low. This was a negative result. (The failure in this case is difficult to explain, especially since no late reexamination could be performed and cases like this usually give a good prognosis.)

CASE LXVIII.—Accountant, aged forty-five. A general decline for about one year. Lack of endurance and energy. Gradual loss of weight. General depression. Extremely irritable. Diffuse rheumatic pains. Distinct sexual decline in libido, as well as erections. Somewhat premature ejaculations. Poor sleep. Blood pressure 160/100. Pulse 80. Weight 170½ pounds. Skin reaction very faintly red, almost absent. Prostate somewhat large. The diagnosis was premature senility. January, 1924, a unilateral operation was performed.

February, 1924 (five weeks after operation), patient was in buoyant spirit. Generally much better. Unusual appetite. Better sleep. Blood pressure 130, 95. Pulse 80. Weight 179 pounds. Skin reaction distinctly red.

December, 1924 (eleven months after operation), physical and mental strength and endurance greatly improved. Ambition and general outlook on life better. Depression gone. Sexual desire and ability slightly improved. Freer tendency for perspiration. Possibly more hair on body and arms. Patient writes, "I can stand any amount of work, mental or physical."

(This case is extremely instructive as compared to the negative Case 66. While the former one is of a distinct psychopathic nature with a prevailing adrenal constitution, this patient is of a very conservative, well balanced mentality and thyroidal constitution.)

(*To be continued*)

Comparative Studies in the Treatment of Chronic Ulcerative Tuberculosis of the Lungs*

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In modern textbooks on the practice of medicine, comparative studies in the treatment of pulmonary tuberculosis are conspicuous by their absence. They agree as to prophylaxis, sanatorium treatment, climatic treatment, home treatment, heliotherapy, artificial pneumothorax and routine medical treatment of the disease, its symptoms and complications.

It appears reasonable that in order to form a correct judgment in regard to the necessity for a certain line of treatment, it is essential to make a comparative study of treatment now available and contrast it with established routine.

PRESENT STATUS

Rest, good food, fresh air and proper medical treatment are the same the world over, it matters not whether the patient is in the Swiss Alps, the high altitudes of Colorado, the medium altitude of the Adirondacks, or the pine lowlands of New Jersey.

Volumes have been written on the treatment of pulmonary tuberculosis, but few give comparative studies to substantiate their assertions.

Is there no valuable lesson for the medical profession in an admission of these delinquencies? Tuberculosis claims its many victims—men, women and children.

Can we not bring to this problem the same methods so successfully employed in big business? The experience of the ages is now being drawn upon in the fight against this disease, but the means are entirely inadequate as shown by the continued ravishment of the disease. Too often, in default of exact knowledge, we blindly seek remedial agencies. The announcement in the lay or medical press of the discovery in Germany, in Sweden, in France, in England, or in the United States of an antitoxin, vaccine, serum, or chemotherapeutic agent for the cure of tuberculosis carries an evanescent ray of hope to hundreds of thousands. Physicians, ever alert for a specific, are none the less gullible.

ECONOMIC EVALUATION

Diseases like tuberculosis which kill in young adult life impose a heavier economic burden than those which affect infants or old people, says the Nation's Health for February, 1925. During the first two decades the family and the community make their investment; during the following forty years they reap the profit. * * On the basis of economic cost, tuberculosis leads, accounting for twenty-two per cent. of the total economic burden of disease.

The annual drug bill of persons suffering from some form of pulmonary disease is approximately one hundred and twenty-five million dollars, of which amount seventy-five million dollars is spent for so-called patent medicines.

The number of medicaments is increasing at a tremendous rate, beyond all proportion to the amount of systematic research being devoted to the subject. The frailties and suffering of tuberculous patients are being grossly exploited.

FUNDAMENTAL SCIENCES

It is true that the bacteriologist and pathologist have accomplished wonders in the present and the last generations in tracing the living carriers of the great infectious diseases and the world owes our Virchows, Pasteurs, Behrings, Flexners and many other valiant workers with these deadly carriers of disease a debt of eternal gratitude. But the fact is that the bacteriologist and pathologist have definitely reached the

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TABLE I.—ROUTINE TREATMENT PLUS TUBERCULIN (O. T. OR T. R., TWICE WEEKLY). THE HEIGHT, WEIGHT, AGE, SEX AND RELATIVE DATA IN TEN AMBULATORY CASES OF CHRONIC ULCERATIVE TUBERCULOSIS OF THE LUNGS

No.	*Sex.*	*Age.*	*Height.*	*Weight on beginning treatment.*	*Weight at end of period.*	*Standard Normal Weight.*	*Probable predisposing factor.*	*Duration of tubercular symptoms.*	*Previous treatment.*
1	M	13	5′6″	90	92	120	Measles	6 months	No
2	F	16	4′10″	88	89	106	Influenza	1 year	Yes
3	M	32	5′5″	120	121	141	Pneumonia	2 years	Yes
4	F	36	5′5″	120	124	139	Syphilis	1 year	Yes
5	F	37	5′8″	115	120	152	Influenza	6 months	No
6	F	40	5′6″	130	128	146	Septicemia	3 months	No
7	M	41	6′	128	130	180	Influenza	6 months	No
8	M	41	5′8″	134	133	158	Influenza	4 months	No.
9	F	43	5′2″	105	108	133	Influenza	1 year	Yes
10	F	55	5′4″	120	125	144	Influenza	8 months	No
Average		35.4	5′5.4″	115	117	141.9		9.3 months	
					2				

TABLE II.—ROUTINE TREATMENT PLUS SODIUM CACODYLATE (02-0.5 GM., TWICE WEEKLY). THE HEIGHT, WEIGHT, AGE, SEX AND RELATIVE DATA IN TEN AMBULATORY CASES OF CHRONIC ULCERATIVE TUBERCULOSIS OF THE LUNGS

No.	*Sex.*	*Age.*	*Height*	*Weight on beginning treatment.*	*Weight at end of period.*	*Standard Normal Weight.*	*Probable predisposing factor.*	*Duration of tubercular symptoms.*	*Previous treatment*
1	F	14	5′	80	88	100	Scarlet fever	3 months	No
2	F	15	4′11″	83	89	98	Measles	4 months	No
3	F	16	4′10″	82	92	104	Undernutrition & Puberty	1 year	Yes
4	M	20	5′8″	128	135	144	Influenza	6 months	Yes
5	M	34	5′9″	137	138	159	Pneumonia	1 year	Yes
6	F	36	5′7″	120	125	147	Influenza	1 year	No
7	M	39	5′8″	138	142	162	Gassed	2 years	Yes
8	F	43	5′10″	136	140	170	Influenza	6 months	No
9	F	55	5′5″	121	126	148	Menopause	8 months	No
10	M	57	5′10″	142	149	175	Pneumonia	6 months	No
Average		32.9		116.7	122.4			9.3 months	
					5.7				

TABLE III.—ROUTINE TREATMENT PLUS SODIUM CACODYLATE AND IRON CACODYLATE (0.5 AND 0.065 GM., RESPECTIVELY, ALTERNATED, TWICE WEEKLY). THE HEIGHT, WEIGHT, AGE, SEX AND RELATIVE DATA IN TEN AMBULATORY CASES OF CHRONIC ULCERATIVE TUBERCULOSIS OF THE LUNGS

No.	*Sex.*	*Age.*	*Height*	*Weight on beginning treatment.*	*Weight at end of period.*	*Standard Normal Weight.*	*Probable predisposing factor.*	*Duration of tubercular symptoms.*	*Previous treatment.*
1	F	12	4′8″	65	72	78	Pertussis	4 months	No
2	M	14	5′5″	92	100	115	Dengue	6 months	No
3	F	16	5′1″	90	97	112	Puberty	8 months	No
4	F	18	5′4″	93	101	119	Influenza	1 year	Yes
5	F	35	5′5″	102	111	138	Influenza	2 years	No
6	M	37	5′8″	127	135	156	Influenza	1 year	No
7	M	40	5′7″	132	141	153	Influenza	2 years	Yes
8	F	42	5′9″	128	133	159	Pneumonia	5 months	No
9	F	45	5′6″	127	134	149	Influenza	8 months	No
10	F	55	5′4″	130	136	144	Pneumonia	1 year	Yes
Average		31.4		108.6	116.0	132.3		11.5 months	
					7.4				

TABLE IV.—ROUTINE TREATMENT PLUS SODIUM CACODYLATE 0.5 GM., IRON CACODYLATE 0.06 GM., AND NUCLEIN SOLUTION ONE C.C. ALTERNATED, AT THREE DAY INTERVALS. THE HEIGHT, WEIGHT, AGE, SEX AND RELATIVE DATA IN TEN AMBULATORY CASES OF CHRONIC ULCERATIVE TUBERCULOSIS OF THE LUNGS

No.	*Sex.*	*Age.*	*Height.*	*Weight on beginning treatment.*	*Weight at end of period.*	*Standard Normal Weight.*	*Probable predisposing factor.*	*Duration of tubercular symptoms.*	*Previous treatment.*
1	M	3	2′11″	24	30	32	Measles	6 months	No
2	F	13	4′10″	70	79	88	Measles	10 months	No
3	F	15	5′1″	90	104	106	Influenza	7 months	No
4	F	18	5′3″	96	110	119	Influenza	11 months	No
5	F	36	5′5″	103	121	139	Miscarriage	2 years	Yes
6	M	38	5′11″	133	148	172	Influenza	18 months	Yes
7	M	41	5′9″	131	143	164	Influenza	1 year	No
8	F	45	5′8″	134	146	160	Influenza	2 years	Yes
9	F	53	5′10″	141	155	170	Syphilis	3 years	Yes
10	M	63	5′9″	135	152	170	Overwork	4 years	Yes
Average		32.5		105.7	118.8	132		19.6 months	
					13.1				

point where they must turn to the fundamental sciences for the solution of many of their most important problems. To illustrate: Their antitoxins, their most powerful weapons in combating invading germs, are chemical substances of specific curative power but of unknown composition and never isolated as yet as pure principles. They are always injected into the body in the form of crude mixtures, loaded down with undesirable and to some extent harmful mixtures.

SPECIFICS

The isolation of the pure principles by chemical methods, supplementing the pioneer work of the bacteriologist and pathologist would prove one of the greatest advances in this work. The matter of health is closely bound up in the delicate adjustment of speed of the various chemical reactions taking place in the body. These reactions may be accelerated or retarded by minute quantities of enzymes. Water which constitutes more than three fourths of the body

contents, has a high dielectric capacity. This property of water is responsible for the ionization of the infinite numbers of molecules which water holds in suspension or in solution. Water is also one of the most important catalysts.

The advances by physical chemists in the study of colloids have found as yet but imperfect applications to the problems of the body, wherein nerve and cell, muscles and organs, the questions to be dealt in are largely those of colloidal chemistry.

Electrolytic solutions and colloids which make up the bulk of the body are especially adapted to electrochemical processes. Hydrogen ions permeate all living organisms. The slightest change in the hydrogen ion concentration fundmentally alters the organism, and hydrogen ions are of the highest electrical significance.

Carbohydrates are the source of the hydrogen ions which are released by oxidation. Lipoid films of the highest electrical significance are the exquisitely thin oil films which surround each of the trillions of cells which compose the body.

FUNDAMENTAL RESEARCH

These complex problems are too infinitely complicated to be solved by one class of scientists. Preeminently chemical in nature, the chemist alone is imperfectly equipped to carry them to a complete and successful solution. He must join hands with the pathologist, the experimental biologist, and the internist. Few institutions encourage such cooperation, yet only cooperation under ideal conditions of time and equipment will consummate the prosecution of fundamental research.

In order to establish a more perfect control over my problems, I have, during the past fifteen years, carried on comparative studies in fundamental research. This has provided a means of arriving at definite conclusions. The results of this work will doubtless be the elimination of many ineffective medicaments and much unreliable medical data.

I have selected for this paper a series of virtually uncomplicated cases which represent comparative chemicomedical research in the treatment of chronic ulcerative tuberculosis of the lungs during a four months' period.

Tables 1, 2, 3 and 4 show an average gain of two, 5.7, 7.4 and 13.1 pounds respectively. The selections as to height, weight, age, sex and other data were not arbitrary, but taken from the usual run of cases. Influenza as a probable predisposing factor in this series is worthy of consideration. The data relative to duration of infection and previous treatment is of little deductive value.

A matter of much importance, however, is the method of treatment. Medication was administered intravenously under strict supervision as to technic and scientific application.

Sweany, in a recent article (1) avers that tuberculins, chemicals, drugs, etc., have been void of results to date. In his experience no chemical or drug outside of food products will modify the disease process *per se*.

I cannot say that my experience coincides with this statement as shown by the above tables. These, it may be said, are a fair estimate of my work during a period of fifteen years.

COMMENT

In order better to understand the therapy in a particular disease at various periods of its development, one should attempt to correlate its phases of diminished and increased resistance with the altered powers of reaction of the tissues and their associated cells. The relation of a therapeutic agent to inflammatory reactions is determined by the tissues themselves. Future investigations will have to deal with the rôle played by the effect of therapy in altering the resistance of the tissues to the infective agent. That is to say, therapy must be capable of producing a state of immunity in human beings through the injection of quantitatively or qualitatively immunizing material. This of necessity demands a brief résumé of the newer pathological anatomical investigations. Ghon (2) has tried to correlate the primary effect of phthisis on the basis of combined clinical and pathologic histological observations in the further development of tuberculosis. The concept begins with the primary infection and continues through the period of generalization to the tertiary period. According to this authority chronic pulmonary phthisis represents no other than the tertiary stage of the infection, in which the further extension of the process becomes restrained on account of the previously intervening increased resistance of the individual and only slowly affects the involved organ through tubular invasion. Thus is found an analogue in its comparison with syphilis.

For the origin of chronic pulmonary tuberculosis, a new infection, a sort of reinfection in an already immunized body, is conceived. The reinfection, in contrast to the primary infection, may be multiple. A certain degree of anaphylaxis or immunization has been established. This again presents a particular phase in which the tissues should react characteristically to therapeutic measures. When the condition is no longer limited to the nodes corresponding to the primary focus, but embraces the diffuse swelling and caseation of tracheobronchial lymph nodes, which break and the virus is liberated into the blood stream. Therapeutic effort to be effective should participate in the reaction during this period of generalization. The degree of immunity produced depends in part on the time of life during which the primary infection occurs, the period of its generalization and the virulence of the virus.

Another factor of distinct importance is the extent of blood invasion. Tremendous blood invasion is an expression of diminished immunity. One deals here with a relatively rapid dissemination through the blood stream of comparatively large masses of the infectious agent, in a body more or less immunized, but the generalization decreases this resistance in direct proportion.

In this tertiary stage of chronic pulmonary phthisis, one has to deal not alone with a hematogenous metastasis, but a possible chronic organic phthisis. The amount of acquired resistance of the individual, the quality and quantity of the virus, the general state of nutrition, intercurrent infections like influenza or pneumonia, and pregnancy, are important factors in determining the course of the disease.

The chronic cases of pulmonary phthisis with a definite tendency to healing through the formation of hyalinized fibrous tissue in the individual foci, are

favorably influenced by physical therapy, and general supportive measures.

When one deals with cases in which the characteristic exudative reaction is mostly in evidence, encapsulation and healing meet with difficulties. The exudative reaction is a sign of lowered resistance, a rapid progressive destruction of the organism. Here physical therapy fails, or may hasten the destructive processes. For this reason we stand face to face with new problems in the therapy of chronic pulmonary tuberculosis. Irrespective of the prophylaxis relative to primary infection and reinfection, we must consider our present methods. It remains for us to evaluate chronic pulmonary phthisis from the point of view of its genesis, prophylaxis and therapeusis, that future generations may be insured of absolute immunity against this disease.

CONCLUSIONS

1. A comparative study of the therapeutic value of drugs in disease is worthy of consideration.
2. The studies made in this series of cases have proved of practical value.
3. The administration of arsenic, iron and nuclein intravenously in these cases was beneficial.
4. In cases presenting clinical evidence of chronic ulcerative tuberculosis of the lungs, these remedies given by the blood stream produce a greater degree of increased resistance and immunity.

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The Surgical Treatment of Echinococcosis*

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(*Concluded from page* 440)

THE SPLEEN

Incidence 2.1 per cent. (Dévé). Eighteen North American cases have been reported to date.

The question of splenectomy versus the closed method or marsupialization and drainage in the case of this organ is still *sub judice,* with the battle leaning towards splenectomy. The question here is not on all fours with that obtaining in hydatid cysts of the liver. The spleen is an organ which can be easily dispensed with in man.

Multiple hydatid cysts of the spleen are not uncommon, and can be easily overlooked. There is here, of course, no question of infective cholerrhagia, and the closed method should, therefore, promise even better results than in the case of liver cysts. Splenic cysts, however, by the time they are diagnosed are often of enormous size, and extremely adherent. Moreover, if subsequent splenectomy prove necessary, and it often is, the adhesions consequent on the adoption of the closed method might complicate further treatment. As a matter of fact, the closed method has not been so generally adopted in the case of splenic cysts as in the case of liver cysts, though Lagos Garcia reported five cases in children so treated, and the tendency has been, especially in France, to favor primary splenectomy. Prolonged drainage and postoperative hernia have been especially frequent after marsupialization of hydatid cysts of the spleen. I have dealt with this subject *in extenso* elsewhere.

MUSCLES AND CONNECTIVE TISSUE

Incidence 5.2 per cent. in adults, 3.2 per cent. in children (Dévé, 1918).

Hydatid cysts of the neck have been reported by Ramsay, Verdelet, Nogueras, Marsiglia, Baccarini, Bevers, and Blacksley. Guterback collected twenty-six cases in 1893. Hydatid cysts specifically in the sternomastoid muscles have been reported by Guyot and Jeanneney, de la Mata, Rosso, and others; in the iliopsoas muscle by Caldera; in the buttock by Ritchie, Hutchings and Cavenagh; in the thigh by Lombard, and Rollet of France, and Da Costa in this country; in the erector spinæ muscles by Lasserre and Laney, who reported three cases in 1923, and collected twenty-six others. Loubat and Lartigaut, and Kothary have reported hydatid cysts of the muscles and connective tissue of the back. Petrescu of Roumania, and J. Ramsay of Australia, report cases of hydatid cysts in the axilla, and Joannides and Riley an American case in the scapular region. A case of hydatid cysts in Scarpa's triangle was reported by de la Mata in 1923, and a unique case of primary hydatid cyst of the ischiorectal fossa by Vergnory, Morel and Vachey.

Cysts in the abdominal wall also occur, and have been reported by Lenormant, who cites sixteen cases collected by Marguet and five cases of preperitoneal cysts collected by Gorse of Lyon. The interest in these cases is mainly a diagnostic one, and in this connection desmoids of the abdominal wall must be remembered. De Tommasi, Vergano, Laurenti, Gowland, Romano, and others have also reported cysts in this location.

It is here that excision en masse is the ideal treatment when practicable. Formolage should always be done. It must be remembered, however, that the condition is rarely diagnosed before operation, except in localities (e. g., South America and Australia) where the disease is so common that it is always borne in mind. As a matter of fact, marsupialization and drainage is the treatment which has usually been adopted.

THE PERITONEAL CAVITY

It cannot be too strongly stressed that while primary hydatid cysts of the peritoneal cavity do obtain, in the immense majority of cases they are secondary

to the rupture of a primary cyst of the liver or spleen. And this although it may be difficult even at autopsy to find evidence of said primary cyst, which may be represented by an insignificant scar only. A further point to be remembered also is that the interests of a patient, in these cases, are conserved by not doing too much at one time. It is much better to attack this condition, always a serious one, in several stages, not forgetting the primary focus, if the latter is still active (Dévé). One has only to read such cases as that reported by Cullingworth and Clutton to realize what can be done by taking—in their case—"eighteen bites at a cherry": and such cases could be multiplied ad infinitum. Thus, Deniker states that six or eight operations are often necessary, and Abadie, Feyguine and Abadie write that repeated operations may cure apparently hopeless cases: De Arias and Arrizabalaga concur. In Flandin's case, six operations were performed in twenty-four years.

I must not leave this subject without drawing attention to the fact that most of the socalled cases of retroperitoneal cysts are, in reality, in the first place cases of secondary intraperitoneal echinococcosis, which have become secondarily encysted. Here, too, then, one must look out for the primary focus. Brumpt says: "Cysts of many kinds become subserous when they fall into the abdominal cavity (the cysts of the Tænia serrata, cysticercus pisiformis; and of the Tænia marginata, cysticercus tenuicollis). Moreover, the fact has been experimentally demonstrated in the matter of peritoneal grafts." Guibé writes: "Engrafted hydatid cysts rapidly acquite an endothelial covering, and they become secondarily extraperitoneal": Blanchard concurs.

PELVIS

As regards pelvic cysts, the chief danger comes from backpressure on the ureters (Deming, Covisa, etc.). Deming, of Connecticut, reported one case and collected forty-seven others from literature, in which complete urinary obstruction obtained. Operative mortality 34.1 per cent. Again, many cases reported as being primary hydatid cysts of the pelvic organs (uterus, ovaries, prostate) are, in reality, cases of secondary intraperitoneal cysts, which have barged into and become incorporated with the organs mentioned: this fact indicates conservatism, when possible, in their surgical treatment. It is necessary to insist that secondary cysts of the pelvis are not necessarily accompanied by peritoneal cysts elsewhere. The latter may be extremely discreet, thus, there were only four in Dévé's case; three in the cases of Dumont and Ahumada; and only one in the cases of Leudet, Toupet and Walther. There is nothing strange in this, for one may inject say two hundred thousand scolices into the peritoneum of a rabbit, and discover at autopsy that only a few cysts have developed: most of the hydatic germs having been destroyed—pseudotubercular echinococcosis. The same remark applies to man, whose coefficient of resistance varies as much as that of animals.

Primary pelvic cysts do occur, but they are very rare, about a dozen to date (Dévé, 1924).

Marion reported one case cured by suprapubic operation. Franc says: "Tuffier and Villar operate from above, marsupialization may be necessary because of adhesions." He quotes Veau and Mauclaire to the effect that extirpation is ideal when possible. Fiolle lauds the coccyperineal approach for retrovesical hydatid cysts. This route was designed for extirpation of the vesicules seminales, and has been advocated by Cúneo for ablation of ampullary rectal cancer. It is also useful for prostatic and rectosigmoid work. The name was originally given by Demarest.

1. *Uncomplicated pelvic cysts.*—Dévé remarks that there are two surgical routes; the upper, peritoneal, represented by laparotomy: and the lower, extraperitoneal, comprising the vaginal route in women, and the perineal route in men. He selects the upper route:

1. To determine whether the lesion is primary or secondary.
2. To ascertain the size and number of cysts.
3. In order to practice integral ablation, because such an operation permits immediate closure without drainage.

He stresses the fact that formolage should always be used, and if there has been soiling of the operative field, it should be swabbed with ether. In this opinion Lhuillier, Ahumada, Caviglia, and Belaustegui concur.

With Chueco, colpotomy is an obsession, but in this he is practically alone.

The various procedures are: enucleation, decortication, extirpation, marsupialization and drainage, and the closed method. One may add formolage *in situ* in the case of multiple small sessile cysts.

The first two are mentioned only to be condemned, and the third is rarely feasible.

Enucleation consists in the extraction of the mother cyst intact from the adventitious capsule, as suggested by Posadas for small cysts of the liver. It has been employed by Peyrot. Picqué and Gregoire reported a brilliant success by this method. It is, however, an unnecessarily dangerous procedure, and it is much wiser to practice extraction of the mother cyst after puncture and formolage.

Decortication is equally dangerous, and useless. It consists of dissecting out the cyst en bloc, like a tumor (Veau). Passeron, Tribaudeau, and Soubeyran tried it, and were stopped by violent hemorrhage. Albarran employed it, but opened both the bladder and peritoneum, as also did Trofimoff. Bonneau all but entered the rectum, and in Meyer's case, death occurred in twenty-four hours from peritonitis as the result of perforation of the rectum. There is also danger of reinsemination of the pelvis. Salvador, Boero, Lejars, Quénu, Routier and Sieur concur. It is wholly bad.

Marsupialization and drainage has nowadays given place to the closed method. Even in the case of multivesicular cysts it is no longer fashionable, providing that the sac is thoroughly cleaned out, and use made of formolage and ether.

Reduction without drainage, after formolage, is at the present day the operation of choice.

2. *Complicated pelvic cysts.*—Drainage is practically always necessary in these cases, and here come in the various extraperitoneal routes, colpotomy in the case of women, and Fiolle's technic in the case of men. The upper route is indicated in the cases of cysts opening into the bladder. Guyot uses a perineal counter opening. Bentley Squier closes the

vesical opening, and drains through a prerectal incision.

For hydatid cysts complicating pregnancy, we have the choice of Cæsarean section or vaginal puncture, in the latter case preceded by formolage. On no consideration should an attempt be made to push such tumors up out of the pelvis, as they are usually fixed, and always fragile. A second operation will be necessary after the puerperium.

THE BONES

Incidence one per cent. One American case has been reported (Walker and Cummins) since Lyon's statistics, which contained two.

The salient point to be remembered in this connection is the close resemblance assumed in this location to the rare echinococcosis alveolaris. Generally speaking, thorough curettement and swabbing with formalin or ether (some surgeons use the actual cautery) may suffice in cases diagnosed early—a rare event: while in late cases, wide resection with possible subsequent bone grafting, or amputation will be indicated.

In the case of the pelvis it is luckily usually a question of the iliac wing, of which the technical resection is easy, and generally well supported by the patient (vide case of Buzzi, cure in two and a half years: case of Finochietto, cure in four and a half years). If the coxofemoral articulation is invaded, resection is necessary, and the prognosis naturally poorer.

If the disease is still more diffuse, involving half of the coxal bone, with an enormous abscess of the soft parts, the outlook is practically hopeless. Simple incision of the abscess, with extraction of the sequestræ and drainage, results sooner or later in one hundred per cent. mortality from fever, cachexia, etc.; on the other hand, the interilioabdominal disarticulation kills equally surely from shock (Desplas, Boppe, and Bertrand).

Other recent reports in this connection are those of Gerand and Mignot, Mignon, Costantini and Duboucher, and Costantini of France: A. Lesi of Italy: Roldan of Uruguay: A. S. Joske, H. Harris, Corlette of Australia: A. Stolz of Germany: Neumann of Poland: Zorraquin and Gomez, A. Buzzi of Argentina: and Cholmeley of Great Britain.

Hydatid cysts of the spine have been reported by de la Mata of Spain: Fournier of Uruguay; Connell, Syme, and Gill and Bullock of Australia: Sholkoff of Russia; Guleka, and Boge of Germany: Tytler and Williamson, Owen, Theobalds, Rendle, and Colman of England. Kersente of Algiers (1924) points out that they are rare, only forty-two operative cases appearing in literature, of these only seven were cured; the prognosis is very bad. Palliative treatment (laminectomy, curettage, and formolage) is usually alone possible.

In Sholkoff's case, resection of the spinal ligaments was found necessary. The closed method was adopted, which is open to criticism, as the cyst contained hundreds of daughter cysts: suppuration occurred.

In Gill and Bullock's case, primary hydatid cyst of the body of the second lumbar vertebra with daughter cysts in the lumbar muscles and spinal canal, a wide laminectomy followed by drainage for twenty-four hours was done. Results excellent, but here operation was done within three months of the first symptom.

Tytler and Williamson report the removal of fifteen extradural cysts for compression myelitis in the dorsal region in their patient. The end results were good. They note that the location is usually posterior (Maguire).

Owen of Melbourne reported five operative cases, site extradural: the closed method was adopted in all except one instance, case three, which was drained: the wound closed in four months. Results good in every case.

Colman of St. Thomas's Hospital, in 1899, reported a personal postmortem extradural case in a boy aged ten, and reviewed the whole subject, going back to 1807. In twenty out of twenty-four collected cases, the cysts were extradural, and the site dorsal in ten out of twenty-five cases.

RARER LOCATIONS

Little need be said as to the surgical technic to be employed when dealing with hydatid cysts of the rarer locations. Cases have been reported in the breast (LaConte, two American cases; Etchevaria; Ramsay): thyroid (Henle collected eighteen, and Vitrac twenty-one): pancreas (Albo of Uruguay; Peters, Phillips, and Ashton in North America): stomach (Delore and Croizier, Savariaud, Brumpt): appendix (Trinca): nasal septum (Lyon's case 165): tongue, gums, mouth, pharynx, parotid (E. Pieper): larynx (Schussler, cited by E. Pieper): skin (ibid.): mediastinum (ibid.): palm of the hand (Maug, cited by Cobbold, p. 281): orbit (Kramer collected sixty-eight and Golowin ninety-three observations: cases have also been reported by Solares, Rudolph, Cabaut, Tiscornia, Stuart, Evers, Lawford, Griffith, Werner, Marshall, DuToit, Satanowsky, O'Hara and in America by Lyon, case 131): placenta (cited by Cobbold, p. 276): kidney of a fetus (Oesterlin, cited by Cobbold, p. 459).

Such cysts must be treated on general surgical principles. Generally speaking, excision is the ideal treatment: if this is impracticable, the closed method should be selected in clean cases (Vegas so treated all his thyroid and pancreas cases), and marsupialization reserved for complex cysts. Formolage is always indicated. It must be remembered, however, that the majority of such cysts, except when occurring in countries where the disease is rife, are seldom diagnosed before operation.

Hydatid cysts of the heart have never been diagnosed during life, and as most of them have been found in the intraventricular septum, it seems unlikely that they will ever become amenable to surgery. Cysts of the anterior ventricular wall, or of the pericardium, however, might possibly be treated by the Posadas method (Vegas and Cranwell). I have dealt with hydatid cysts in this location quite fully elsewhere.

Finally, it is a matter of interest to note that hydatid cysts have been found in almost every organ of the human body—with the single exception of the testicle: my authority is Bland-Sutton.

A very comprehensive bibliography on the subject of echinococcosis will be included in the author's reprints.

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The Health Examination and Its Distinctive Features*

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New York

A new field is opening for the physician. I venture to predict that in the future, all intelligent men and women will have their own health physician to whom they will look to keep them well and vigorous. This will not come until the public recognizes the fact that the physician can adequately give this service. To hasten the day and to insure its coming, we shall be wise to address ourselves to the task of becoming as efficient and successful in this field as in the field of prevention of communicable illness and the cure of disease.

While the difference between the health examination and the usual office call, which may properly be called disease examination, seems so little to those who are approaching the subject for the first time, study and experience will reveal distinctive features of great importance. Indeed the success of the health examination depends wholly upon making it widely different from the customary search for disease, although this search for evident pathology constitutes one of the several parts of the health examination.

At the outset, I propose the name of health client for the candidate for the health examination, dispensing with the customary term patient. The health client comes to the physician not to be relieved of a pain, but to be foreguarded against it. He is impelled by wisdom, counselled by caution. He wishes to live long and keep well. Sometimes he is wise enough to know that there is a degree of health superior to the average. He desires optimum health. To satisfy this man, we must not cling to the old idea that one is "all right" if no disease can be found which is mentioned in the medical dictionary. Health is something positive. It is not merely absence from disease. The patient may be free from discoverable pathology and yet a poor specimen of manhood, leading an unhygienic life and headed toward trouble. He may have no disease, yet he has no stock of positive health. His margin is zero.

To increase this health margin, to develop an inferior physique to reasonable strength, to attain maximum efficiency, to increase personal capacity for happiness and work, to lengthen the span of life and health, are the purposes of the health examination.

Here is a new subject—health. Hitherto, practically all of our medical books and even the books on hygiene treat almost exclusively of disease and its prevention. We need more textbooks for the physician on the subject of *positive* health and how to prescribe it.

The health examination differs thus far from the ordinary disease examination in the name of the one examined, who is a health client—in the motive which brings him to the office, and in the objective, which is positive health. Yet to a great degree, it is true that every health examination must also be an investigation for disease. This is the part with which the physician in his ordinary practice is familiar. In the health examination, evidences of disease must be discovered, preclinical signs disclosed, and tendencies which may later cause disease carefully searched for.

The scope of the health examination is extensive. It covers the whole man—his past and present, and seeks to recast his future in a larger mold. The usual examination is intensive, seeking a clear definition of the pathological condition. The health examination, therefore, consumes more time, requires a broader vision, and a wider and greater scope.

The health examination has four fields: 1. Heredity and collaterals. 2. Habits and hazards of life. 3. Diseases—past, present and future. 4. Prescription and instruction of client.

A STUDY OF HEREDITY

Large values can be obtained from a rapid and well directed study of the family tree. One oak leaf will differ greatly from the others, although they are all oak leaves (subject to gall fly attacks, but invulnerable to various rusts and blights), their immunities and susceptibilities are heritable, though the diseases themselves are not. We need more Mendelism in medicine. Ontogeny and phylogeny recapitulate each other. Many times the future can be foreshadowed in contemporaneous aging periods of his forbears. There is a probably greater family resemblance in kidney tubules than there is in noses, and a greater similarity in the efficiency and endurance of the pancreas than in stature.

In this study we must learn what is important to

*Address delivered at a special meeting of the Medical Society of the County of New York as the report of the chairman of the subcommittee on the instruction of the physician relative to health examinations.

our client's future, and what is merely incidental. A small matter may completely change the whole tenor of our instruction. Moreover, we must devise and adopt a method of routine that will be inclusive, decisive, and swift. If we can afford to conduct health examinations in our practice at all, these and other phases of the work must be made efficiently systematic.

To this end it is of greatest advantage to provide the client with a personal history questionnaire, which he can take home and fill out at his leisure. For this purpose the ordinary blank will not serve. It must sympathetically be adapted to this need. This saves time and a better record is obtained. It must not supplant the further questioning by the physician in the office, with which it in no wise interferes. It is an indispensable basis for further records and renders it possible to complete the examination in a reasonable period of time. It is often convenient for the client to have his examination in two office calls, the first for history tests and physical examination, the second when the laboratory reports are in hand for check up prescriptions and instructions.

HABITS AND HAZARDS OF LIFE

Men and women are guided in the conduct of their lives mainly by instinct. They eat, work and sleep as their heredity and circumstances command. Surrounded by conditions that greatly differ from those which determined their present structure and the character of their instincts, they suffer from the results of inappropriate reactions and maladjustments. These are repeated daily, slowly cause deterioration and disease. Diet, exercise, recreation, rest and work may either make or break a man. It is our purpose to enhance health, happiness and efficiency, and to prevent damage. To search the daily life thoroughly takes long, well directed, effort. Here the questionnaire saves time and adds completeness and accuracy. Always, however, the salient points which stand out in the history will require more complete notation, which can be rapidly and incisively done.

Since our prescription is to be given in the form of life guidance, and not but incidentally in the form of medicine, these data are of paramount importance. They will also serve to arouse the physician's suspicion of pathology and to guide his search for symptoms and preclinical signs.

PERSONAL HISTORY OF DISEASE

The questionnaire should be especially complete and simple in the matter of previous diseases of the health client, and in the record of such minor symptoms and discomforts as most men occasionally experience. This information, with the heredity record, points the search for pathology toward suspected points. Previous disease affects the future in several ways:

1. It often leaves a mark, scar or effect in the organ affected, which may subsequently flare up into another attack.
2. It may leave a half cured focus of infection which continues to cripple the organ and damage the whole body.
3. On the contrary it may confer an immunity.
4. It may have created a weakness in another organ which in later years determines a different but definite disease.
5. It may damage the whole body and lead to earlier deterioration.

In the ordinary examination of the patient in the office we are definitely concerned with an incisive search for the cause of the disease or disability present. In this phase of the health examination, we are searching a wide field for influences that will mar the future. Of course there is nothing to prevent the scrupulous physician from extending the boundaries of his usual inquiry beyond the confines of the immediate disability of his patient. In fact it is becoming good practice.

DISCOVERABLE DISEASE

The health examination also includes a search for disease which may be present, but yet unsuspected by the health client. This is the field with which the general practitioner is more at home. Yet it will require a distinct effort for the busy family doctor, who customarily spends ninety per cent. of his time visiting sick beds, to bring himself to search for signs of disease which may be present in an apparently healthy man who has come into the office. It is only after considerable experience that one becomes accustomed to the sense of a need of effort which this search necessarily entails. In fact this has been so far outside the experience of some physicians that health clients coming for an examination, have been disappointed. This part of the examination will be easier for those who have been in the habit of treating chronic and constitutional diseases, and most difficult for the highly expert specialist and the overworked family doctor.

PRECLINICAL SIGNS OF DISEASE

This is a new term in medicine and needs definition. I suggest that the term be applied to signs which foreshadow disease and precede subjective symptoms. With many of these we are familiar. The hardening of the arteries, the appearance of albumin in the urine, the Romberg symptom, are examples, but there are in addition a multitude of half known or little defined preclinical signs which are not often to be found in textbooks, but which have been noted by thoughtful physicians who have followed their clients for a number of years and have seen the gradual development of constitutional diseases. Some of these occur first as minor discomforts, irregularities in function and unnoticed disabilities. The condition of the skin, the background of the eye, the nature of the first sound of the heart, the efficiency of vasotonicity and gastrointestinal tonicity are particularly fruitful fields for investigation. It is in this department—preclinical medicine—that lies the greatest opportunity for development. Herein lies certainly the greatest need of the public, for who can witness the enormous increase in the number of deaths from disease in the cardiovascular renal triad without being thoroughly convinced of the existence of a great opportunity for advance and a vast need for medical service?

It is in this field that the public has already been educated to apply for relief in the form of the health examination, and if they are to apply to the practising physician instead of to health organizations and more or less regular practitioners, it is incumbent upon those who constitute the rank and file of organized medicine effectively to reinforce their ability to meet the situation.

DEFICIENCIES IN THE STRUCTURE OF THE BODY

The anatomical structure of a man is both historical and prophetic. It reveals signs of his successful struggle against disease, and shows the cost of his victories. Weakness, past, present and future, is revealed by a flattened chest and a lax protruding abdomen, and constitute a challenge to the constructive ability of the physician.

In the health examination the tape measure is a necessity. In the ordinary office call the physician may feel that there is little or no reason for a complete stripped examination. In the health examination it is essential.

FUNCTIONAL TESTS

An important characteristic of the health examination is the functional testing of the organic equipment. This is not customary in the usual office routine unless it is directly related to the pathology at hand. In every health examination a routine test of the motility and clearance of the intestinal tract, and one or more circulatory function tests are given, preferably blood, ptosis, and pulse recovery tests are given.

SUMMARY

With this information all in hand, the examination is completed. If the patient is then dismissed, however, the procedure is a failure and nothing results. The most important part is to follow.

It is now necessary for the physician to assemble his data and to determine the various factors which bear on the patient's future so that he may do two things. First, he must decide upon his own course of action, and secondly, he must lay out a program for his client and give him the necessary instructions.

He commonly finds obscure pathology which requires further diagnosis. He frequently discovers definite disease which needs medical treatment. This he may give himself, or he may refer his case (now a patient) to a colleague for special treatment.

He may observe preclinical signs which foreshadow disease and he will prescribe a régime which will postpone or prevent it. He will note errors in life management that have already done harm or will prejudice the future. These he will seek to remedy by sympathetic counsel. He will find structural and functional deficiencies and prescribe methods of improvement.

With many factors in hand, considerable judgment will be required to adopt a plan of action and dealing with the client so that just enough will be attempted and carried out in just the right way.

PRESCRIPTION AND INSTRUCTION

His course and program determined upon, he has the task of so instructing his client that the desired benefit will be obtained. This is by far the most important and critical part of the health examination. Without it all that has gone before is futile. Our prescriptions, however enlightened they may be, are of no avail unless they are faithfully followed. By some means, the client's effective continuing interest in his health must be aroused. The quickest and the most harmful way to do this is to frighten the client with warnings of danger. This is frequently unnecessary and destructive. The better way is to point out the benefits of a large positive health margin and make it continuingly worth while to adopt a well-directed mode of living. This requires skill, conviction, understanding and enthusiasm, and it is most effective when it is supported by the physician's own example of abundant health.

To aid this purpose, the client should be given his health prescription in written form. This is most effectively given in the form of a health booklet, which contains the carbon copy of the more objective of his tests and measurements, compare with the normal, his diet and exercise clearly set forth, and his own health questionnaire, which contains habit items in which he can improve. In this he also keeps the record of his progress and brings it back to his health consultant at the end of six months or a year for his reexamination. This clinches the whole matter in so far as it is possible to do so.

CONCLUSION

It will be seen, therefore, that the health examination is not a perfunctory fifteen minute survey, ending with the assurance that "You are all right. I would recommend you for any amount of insurance." It is an important event in the life of the client, and not less than an hour's hard, welldirected work on the part of the physician is required.

No one is qualified to do this work unless he is prepared to adopt a new point of view and to labor to acquire a breadth of knowledge in a field which is coextensive with all of life and medicine.

This is possibly a new specialty in medicine, but it is one in which the presentday specialist, though he may not enter it with ease, will play a most necessary part. The health specialist cannot hope to know all the special fields of medicine, as they may be severally known by his colleagues, expert in diagnosis and treatment in their various lines. To these he must refer his patient and to those he must look for instruction to be able to recognize the obscure and important preclinical signs of disease.

While we may rightfully acknowledge that this field has been prepared for us largely by others, and we recognize the fact that health service clinics in properly organized hospitals can and should aid those who cannot afford to pay the office fee, yet we feel that it is a part of the work of the medical profession, which can best be done by the private physician in his own office, where the personal, sympathetic relationship of health client and health consultant may be developed and maintained to the greatest advantage to all concerned.

Thus there is opening a new field for medical service. It awaits the physician who will faithfully prepare himself to discharge his full duty therein.

571 Park Avenue.

[Following Dr. Crampton's introduction, five papers on preclinical medicine will appear. The balance of the papers will come out in the two subsequent issues of the Medical Journal and Record. This symposium, held at the New York Academy of Medicine, should prove to be a solid cornerstone in a field of medicine hitherto not sufficiently stressed. We are sure you will look forward to this splendid array of material by the leaders in their respective fields of medicine, who will cover every branch of medicine from the preclinical point of view.

The Editors.]

The Genitourinary System*

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New York

The clinical picture we are called upon to contemplate in studying early physical signs of disease and early symptoms of disease is a picture which, if it deceives us at all, will deceive us into thinking that the person has nothing the matter with him. That is our difficulty; that is the difficulty we are trying to face today.

But generally speaking, the aspect of the patient is that of a healthy person. I have asked myself, "What is diagnosis? Why do I make so many faulty diagnoses and why do other people make so many faulty diagnoses?" Largely, of course, because of an insufficient physical examination, and that in my department, of course, immediately brings to mind Dr. Osler's well known adage that "One of the two functions of the consultant is to put his finger up the patient's rectum." I suppose that the lack of the habit of doing that brings a great deal of profit to the specialist in urinary diseases because other doctors will not casually and constantly make rectal examinations.

The second thing that comes to my mind is the most venerable and time honored and the most respected in the arts and all the customs of medicine, sometimes known as uromancy. Uromancy I think deserves the fame it achieved, meaning, prognosis by the inspection of urine. No one now looks at the urine of the patient. The urine is taken and bottled, and is then carefully carried, more or less surreptitiously, to the laboratory, encouraged to ferment there for some twenty-four hours, and then, lest the laboratory man see too much, he interposes various glasses between his eyes and the thing he looks at. So that we all get as far as possible from looking at the urine.

Now I, in my humble trade, learn more about urines by looking at them than I do by any other method. There are other things worth doing to urines, but above all else it is worth looking at the urine under various circumstances, but notably simply the urine as it is passed. It is more accurate still, perhaps for certain purposes, to look at the urine obtained by catheter under certain circumstances.

Just to look at the urine is a most marvelously helpful thing. Many of the patients who come to me for diagnosis suffer a lack of diagnosis in large part because no finger has been put up their rectum, and secondly, the urine has never been looked at by the human eye unprotected by microscopes or other implements. So that insufficient diagnosis depends, of course, largely upon insufficient physical examination, but it also depends, as we all know, upon lack of genius. The brilliant diagnostician is the genius who has a flair, almost that of a hound on the scent, for the essential symptom. In trying to analyze in my own mind what that means, I say to myself that perhaps our difficulty is largely that we attribute symptoms to diseases and not to physical facts. Diagnosis doesn't consist in saying, "The patient has a fever and therefore he has typhoid fever." The diagnosis consists in attributing the observed physical fact to an assumed—possibly provable, possibly not—physical cause.

I had a brilliant example of that only last week, where I first of all made an erroneous diagnosis, or at least partially erroneous, and then the following week I made a correct diagnosis. A patient was sent to me by a physician who had seen him through a socalled grippe, and following this the patient had been suffering from frequency and painful urination, and it was noted by his wife that his urine did not smell right. His urine did smell badly and also, when looked at with the glass, it had muddy pus in it. While he was convalescing from his grippe, he was sent to me for a cystoscopy. I examined him under unfortunate circumstances, so I came to a conclusion that he might have retention of urine. After he had passed his urine, I put a catheter in his bladder. He still had some urine in his bladder. He was a man of about sixty, so that I thought he had something the matter with his prostate. I used the cystoscope; found nothing the matter with his bladder or prostate, and as I found the patient was not particularly strong, I thought it wise not to catheterize the ureters at that time. I sent him home and instructed the physician to wash the patient's bladder out and give him urotropin. The physician reached the justifiable conclusion that he could have done all those things without sending him for a highbrow opinion to me. He protested that I hadn't catheterized the patient's ureters. I stated that the patient's condition wasn't propitious for that. I suggested that he send him back within a week and I would catheterize his ureters without additional charge. He came back to me and I catheterized his ureters last Monday and I obtained information that he had marked infection of his kidneys but not of his bladder. The infection was a curious one and I never had seen quite the like of it before. I sent the urine to the laboratory for culture and obtained an interesting report, that the patient had a paratyphoid bacillus in his urine. His grippe immediately becomes clear now. He had had paratyphoid; that was his grippe. He had a curiously inflamed bladder, and the entire situation I believe will clear up on urotropin and bladder washes.

I think that is a fair illustration of how one wobbles about until either genius or experience or the laboratory, or whatever gives us the hint, and the situation is clarified.

It seems to me that the way we get at earlier diagnosis, the way we get at preclinical signs in medicine, is by paying more attention to the striking symptoms around which gather groups of other symptoms. For instance, there is the clinical picture of tuberculosis. I suppose that it would have been highly profitable, when I was a young man, for a speaker on this rostrum to talk for an hour upon the

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one fact, that a patient in youth, with unexplained frequent and painful urination, had tuberculosis of the kidney. I don't suppose it would be necessary to talk for an hour on that subject now. How do I know it? Because I don't see any more cases of tuberculosis of the kidney; the general surgeons manage those now; make their diagnosis. Twenty years ago, four out of five patients with kidney disease that I saw had tuberculosis. They came to me because somebody had been washing out the bladder for forty weeks and hadn't done them any good, and I sometimes found that the patient had tuberculosis. Spontaneous, frequent, and painful urination in a young person, whether or not accompanied by hematuria, is caused by tuberculosis. It is no longer considered a preclinical sign, but a perfectly definite clinical picture that everybody knows about.

In the matter of tuberculosis, the converse was the difficulty. These patients were brought to me not as having tuberculosis, because the laboratory didn't prove that they were cases of tuberculosis. There are two ways out of this dilemma: improve your laboratory technic and you will find tubercle bacilli more often; also improve your clinical and pathological knowledge; and you know that as mixed infection predominates in the older tuberculous conditions, the difficulty of finding the tubercle bacillus naturally becomes greater.

It is recognized that by other methods, such as the pyelogram, that it is possible to make a perfectly definite diagnosis of renal tuberculosis without the tubercle bacillus being found. That is a preclinical sign that has gone by.

There is a preclinical sign that is predominant over all other preclinical signs, as I see it in my practice nowadays, and that is the hematuria that is cured by swamproot or other infallible remedies.

I saw a patient today—he is on his way to the hospital now. I am going to cystoscope him and bail a lot of clots out of his bladder this afternoon. This should have been done five years ago when he had his first hematuria and the bleeding stopped, and he went along in perfect peace until he got his bladder full of clots and could not go on. Hematuria not accompanied by pyuria, of brief duration, or we might also add, occurring in an adult, is to be supposed an evidence of malignant tumor of bladder or kidney, until it is proved to be something else. That is really the greatest and most important clinical sign today, because we are in the matter of tumors just at the point where we were when I was a youngster.

Cancers today are just about where our tuberculoses were then, and with the various means, improved diagnosis, improved therapeusis, we are getting to a point where carcinoma of the urinary organs, like carcinoma elsewhere in the body, if it can only be gotten at early enough, is perfectly manageable.

I do not suppose it is so much the difficulty in the clinician here as it is in the patient. The patient has a hemorrhage and is prepared to die, and the hemorrhage is stopped, and the patient is prepared to run as far from a doctor as he possibly can—that perfectly natural instinct must be controlled just as much as though he had a pulmonary hemorrhage.

There are many other items that could be mentioned and I will mention a few of them, even at the risk of blurring the picture I would like to leave in your minds of what I have said.

There is a simple point in analyzing urines, which is overlooked by clinicians at large. The finding of casts is almost an essential. They might not be found in every specimen of urine examined, but surely you expect to find some sort of casts sooner or later. Yet a diagnosis may be made of surgical nephritis without any casts being found. I quite agree that the toxic nephritides, socalled medical nephritis, are characterized by the presence of casts in the urine. In part at least this is because the urines we have occasion to examine are so commonly befouled with more or less pus and blood, that it is slightly more difficult to find casts. I fancy if the other solid elements could be gotten out of the urine, the casts would be much more readily discovered. But we do make diagnoses without finding casts, and I have defied people to find casts in some of these cases and have had good laboratory men fail to do so. For some reason casts are less commonly found in the urines of patients who have nephritis as a result of surgical infection than is the case in toxic nephritis. Indeed, one of the tricks of the trade is to make a diagnosis of tuberculosis of the kidney where a patient has a good deal of pus and a variety of casts in the urine; the trick depending upon the fact that such a patient is likely to have a toxic tuberculous nephritis on one side, due to the infectious tuberculous bacillary, and a necrotic condition on the other side. You will have the tubercle bacilli on one side giving the pus and the toxic nephritis due to the tuberculosis on the other side giving the casts. I don't feel that one may quite make a diagnosis of tuberculosis of the kidney on that combination, but it is a striking combination when seen.

Another item of interest is the diagnosis of carcinoma of the prostate. Within this week I operated upon a patient with carcinoma of the prostate and have implanted seeds of radium into that prostate, with a fair hope of controlling that condition, or at least with a much better hope than I have ever had in any other case. How did it happen that I should have made a brilliant diagnosis early in this case of carcinoma of the prostate—so early that I feel that it is still well within the prostate and can perhaps be controlled? Largely because I didn't make the diagnosis; another man made it for me, so that I don't have to blush about it.

The diagnosis was made under these circumstances: This patient went to his physician, who is an expert in urology in another city, and complained some two years ago, that he had some frequent and painful urination. The urologist, being a urologist, put his finger up the patient's bowel and examined his prostate, and examined him in various other ways and found no reason for any alarm and declared that he saw nothing wrong. Whereupon the patient was satisfied and went away, and came back to him ten days or two weeks ago with a report of a return of the same symptoms, a mild and definite irritation about his bladder, whereupon the doctor examined him again, and this time felt a distinct lump in the prostate. He sent him to me for treatment.

I urethroscoped the man; I felt this lump which

seemed to be a carcinoma completely within one of the lateral lobes of the prostate. I x rayed him, and there was no shadow of any stone. Stone and carcinoma are readily confused. The x ray immediately settles the confusion because prostatic calculi are almost always pure lime and always show in an x ray. His urine was clear of any pus; I felt it wasn't tuberculosis, and I felt it must be a tumor. I urethoscoped him and then I saw what was extremely interesting to me. At the base of his verumontanum there were a few little granulations, a little roughening due to the ulceration left behind by some gonorrhea or some sexual excess that had given him the frequent urination; but the lesion that had given him the frequent urination was surely not the tumor. I was quite sure that he had this tumor, but I was equally certain that he had been fortunate for he had come to a physician complaining of a totally unimportant physical sign and had come away with a diagnosis of the most important disease.

I think that well illustrates how difficult is the diagnosis of carcinoma of the prostate in time. Only a happy accident saved this man from having the carcinoma grow and possibly fill his pelvis without giving him any symptoms.

Many tumors in the bladder may be felt by bimanual pelvic examination.

One thing more about the rectal examination, and that again refers to carcinoma of the prostate. A great many years ago a patient was sent to me from Boston, a distinguished patient; so distinguished that the urologist who had put his finger up the patient's rectum in Boston and diagnosed the case as carcinoma of the prostate, didn't have the nerve to tell the patient what he had found. So that cost the patient a trip to New York and a visit to me, and I put my finger up the rectum of the patient and diagnosed it as carcinoma of the prostate. Then I looked at the nice, old gentleman again, and I just couldn't tell him; I was as bad as the man in Boston. So I said, "Well, now, I think we ought to have an x ray; it might show us something," and the awful part of it was that the x ray did show us something. It showed us that his prostate was full of calculi. That was probably about fifteen years ago, and I sent him away, and he never had a carcinoma of the prostate.

I knew perfectly well that any lumps I might feel within the prostate might be stone; any lumps that I felt not only within the prostate but also beyond the prostate, would be likely to be infection or carcinoma, and of course could not be prostatic stones because they don't go in that direction.

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Preclinical Symptoms in Gynecology*

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It may be taken as a dictum that the causes of gynecological disease can be divided into two classes, predisposing and exciting; but I have not been asked to take up the causes, but to discuss the preclinical signs. Therefore I have to leave this classification with a few random remarks.

Such a classification can easily be followed in a general way by the specialist, yet when all the disorders to which the genital organs are prone have to be considered, it becomes extremely difficult to decide upon preclinical signs of value to the general practitioner. In some patients they may be directly traced to a defect in development; in others to defective living, impure sexual contact, childbirth or other traumatisms, or to new growth formations. A proper classification then undoubtedly should include age, heredity, congenital, hygienic, sexual, infective, and traumatic causes.

Heredity.—Under hereditary causes may be listed feeble or exhausted stock, defective physical development and lessened power of resistance naturally predisposed to defective offspring. Improper methods of life on the part of one or both parents predispose to lessened vitality in the children and the intensification of preexisting traits, so that lowered resistance to certain diseases are often thereby transmitted from parents to offspring. All of these may be modified by careful hygiene and improved environment; some possibly may be corrected permanently by such manner.

Age.—While not an exciting cause of pelvic disorders, age nevertheless bears a close relationship to certain genital affections. Special types of disease are likely to develop at special periods of a woman's life, and age alone at times may be a valuable guide in diagnosis. This is particularly true at the periods of puberty and the menopause.

Congenital causes.—In gynecology the effects of heredity are usually not apparent until the patient reaches that time of life when menstruation begins, or should begin. When menstruation does not start normally, either in time or character, it is strong presumptive evidence of some error in development. Here the family history of the mother and of sisters is often of value in determining the significance of a late onset of menstruation, or one accompanied or associated with undue suffering.

Hygiene.—Plenty of outdoor life and exercise are just as important as at all other periods of life, and are especially desirable during the transitional period of puberty, when the girl is developing into a woman —a time when the future health of the woman is so often sacrificed upon the altar of her education. Proper, nonconstricting clothing, limiting nerve disturbances, regulating of functions of the gastrointestinal tract with particular attention to the bowels to avoid pelvic congestion, are of the greatest imporance. At the time of menstruation more than ordinary care

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regarding the body functions should be carried out. In the presence of any menstrual irregularity, all active exercise had best be omitted, and careful attention paid to regular hours of rest and the avoidance of all nervous excitement.

Sexual causes.—These are so complicated, and so difficult to explain when encountered, that it is hardly possible to take them up in an address of this sort. The neurologist, working in his fourth dimension of medicine, is far more capable of dealing with these nervous sexual affections as they arise than is the gynecologist, and should always be consulted at least. Many of them are a result of ill advised marriage—I should say probably sixty to seventy per cent. of the cases that I encounter can be traced directly back to this cause—and while they may not lead directly to the production of local disease, yet they predispose to various functional disorders. Present day means taken to avoid conception are an important predisposing factor, and the illegitimate termination of pregnancy too often results in the production of pelvic disorders of the gravest nature, the results often reaching far beyond what the individual had any idea of at the time they were practised.

Traumatic causes.—In this class may be included those injuries sustained during childbirth, the great majority of which can only be avoided by better obstetrics. All lacerations should be repaired at the time they occur—this is in the realm of obstetrics—and displacements should be corrected before they have time to become chronic. By these timely measures much chronic invalidism can be avoided in the future and many cases of subsequent sterility prevented. Lacerations of the cervix have been many times unjustly accused in the past, as they are at the present time, of being a prolific source of disease among women. Now, if cervical lacerations, as they ordinarily come to us, are indicative of future gynecological disease of any moment, my experience has failed to reveal it to me. They have been accused of causing everything from cancer to neurasthenia, and have been ruthlessly—I say it advisedly—ruthlessly repaired throughout the whole era of gynecology. They should be repaired, as I have said before, at the time they occur, because that seals one avenue of possible infection to the woman during her postpartum period; but after that time has passed I know of no good and sufficient reason for the wholesale repairing of cervical lacerations.

There is one type of cervical laceration whose importance the general practitioner is slow to recognize, namely, that which extends through the internal os into the lower segment of the uterus, and when unhealed, prevents the proper closing of the lower uterine segment in subsequent pregnancies, a very prolific source of habitual abortion. I see frequently cases of habitual abortion that have been diagnosed as syphilitic and the patients treated with mercury, salvarsan and allied products, where the cause of the abortion lay in the extensive laceration of the cervix, purely a mechanical factor easily corrected by operation when once recognized. Such a laceration does not always show to the eye. It may have healed perfectly on the vaginal aspect of the cervix and yet left under this the muscular tissue so widely separated that when pregnancy has advanced beyond a few weeks, the lower uterine segment opens and allows the ovum to prolapse into the cervical segment. There the ovum dilates the cervix, gradually pushing through into the vagina, and by pulling upon its uterine attachment above finally becomes loosened, and abortion results.

A valuable preclinical sign in these cases is bleeding in the early months of pregnancy. This is quite common and often due to unhealed, or unrepaired internal os lacerations. When the patients are put to bed, the ovum has a chance to return again to the uterine cavity, relieving the tension on its site of attachment, and the bleeding ceases. If a patient gets up too soon, it begins again. In many of these cases if the patients are kept long enough in bed, the pregnancy will go on to a successful termination.

Infective causes.—The most important of these causes is the gonococcus, which is a most prolific source of infection of the entire genital tract, even spreading to the pelvic and abdominal peritoneum. I know of no practical rules that can be laid down and followed out for its avoidance. When once acquired, diligent and persistent treatment must be carried out, and only a relatively small proportion of patients are restored to a normal functioning condition.

In taking up the preclinical signs of gynecological disease, I shall limit myself to the periods of, 1, girlhood; 2, the procreation period, and 3, the period of the menopause.

GIRLHOOD

In the period of girlhood, irregularities in the onset or character of menstruation are of sufficient importance to be watched for carefully by the practitioner who is responsible for her health and future welfare. These two symptoms—irregularity in onset and character—are of nearly equal importance, and usually are due to practically the same causes.

As a rule in this country we expect, in the average young girl, menstruation to begin at some time between the ages of thirteen and fifteen, and it should begin uncomplicated and unassociated with any symptoms of an abnormal character. When it does not appear at a reasonable time, the girl should be given a thorough examination, general and local, to determine, if possible, the probable cause. Upon the success of this examination and the appropriate subsequent treatment may depend her future health, happiness, and the chances of that great boon to her sex—maternity.

Amenorrhea may be a preclinical sign of blood destruction and destructive metabolic processes in general. The common constitutional disease associated with amenorrhea is pulmonary tuberculosis, though as a rule it is seen only in the terminal stages of this disease. Amenorrhea is associated with the primary anemias and chlorosis, and with diabetes, chronic nephritis, profound nervous shock, and with organic nervous diseases. Disorders of the endocrine system are frequently indicated by amenorrhea, as hypofunctions of the thyroid and ovaries; rarely of the pituitary and adrenals.

Amenorrhea at puberty indicates, however, usually some local cause, such as defective development of the pelvic organs, the defect here being a lack of proper development. In rare cases the amenorrhea is due to an entire absence of uterus, ovaries, or both, and at times the nonappearance of menstruation with

healthy pelvic organs may be caused by an atresia of the vagina or cervix. It is thus evident that a local examination should be made in all cases of amenorrhea. It is hardly necessary, it seems to me, to say that this local examination, to be satisfactory to the physician, and in justice to the young patient, should be made under anesthesia, and that the anesthetic used should give sufficient relaxation so that a thorough bimanual pelvic examination can be made. Of course, such an evident cause of failure of appearance of the menstruation as atresia of the hymen or atresia of the lower vaginal third could hardly escape one examining such a patient under an anesthetic, but occasionally an atresia of the cervix which is higher up may be missed because a vaginal examination has not been made. Therefore, practise assiduously the making of both vaginal and rectal examinations with one finger, so that these young patients can be examined satisfactorily and without undue insult to their tissues.

When menstruation is once normally established it should recur monthly at intervals of twenty-eight to thirty days, and last from two to eight days, the quantity of blood lost being about one ounce a day. Constitutional symptoms should be absent, and the various deviations from normal are often of considerable preclinical importance. It is seldom that menstruation begins before puberty, and all cases of precocious menstruation indicate a premature general and sexual development. This condition of premature general and especially sexual development is in a measure hereditary, but may be the result of association with older and vicious children.

We have to recognize the truth of what Dr. Kennedy has said in regard to the deleterious effects of the cinema upon the nervous systems of these young patients. Here I feel that if we are to go on allowing such disgustingly sexual performances as are at times given in the movies today, we will have many little children showing precocious sexual development in short order. It is only necessary to go to the cinema and watch the expressions of these young folks just approaching puberty, as they contemplate such sexual performances, and to overhear their remarks, to make one apprehensive for their future.

PROCREATIVE PERIOD

During the procreative period of life, menstruation is regular, except during pregnancy and lactation. The most significant signs of disorder are dysmenorrhea, menorrhagia, and metrorrhagia.

Dysmenorrhea is always at the onset of menstruation indicative of an error in development, or a lack of proper development in the pelvic organs. I know of no other cause at this time for dysmenorrhea. Therefore, it becomes a preclinical sign of extreme importance, and one which always calls for proper consideration in the young patient.

Menorrhagia, or profuse flowing, like amenorrhea, is but a sign or symptom, and not a disease, and one of several or many causes may be responsible for its existence. These can be divided into general and local. Of the general or systemic causes, those of disturbances in the endocrine system call most frequently for special treatment, and the endocrine organs mostly responsible for menorrhagia are the ovaries.

While the thyroid may produce excessive bleeding at menstruation, it may also cause amenorrhea. Why endocrine disorders are associated with amenorrhea in one woman and menorrhagia in another, has not as yet been explained.

As indicative of local disorders, menorrhagia points toward inflammation, acute, subacute, or chronic, of the cervix, uterine corpus, tubes, ovaries or pelvic cellular tissue; to ulcerations of the cervix, either simple, tuberculous or malignant; to neoplasms of all forms, whether including the cervix or any part of the uterus. New growths of the tubes and ovaries, however, are not, as a rule, associated with altered menstruation.

Displacements of the uterus leading to structural changes are frequent causes of abnormal menstrual bleeding, and are most easy of diagnosis. Retrodisplacement and subinvolution of the uterus are quite common after confinement, and every patient should be examined repeatedly during the year following delivery to determine the position and state of involution of the uterus. The most valuable preclinical signs are severe backache, pelvic drag, constipation, dysmenorrhea, menorrhagia, leucorrhea, increased nervousness, sterility, or repeated abortion. Here I mention the extreme importance, as a preclinical sign, of the premature appearance of the menstruation after confinement. A great many of these cases, if examined, where the menstruation has returned within a month or two after delivery, will be found to have a displaced, enlarged subinvoluted uterus.

Metrorrhagia is nearly always of uterine origin, and when persistent should be considered as indicating but one thing—the presence of a uterine neoplasm and probably a malignant one, unless the contrary can be demonstrated.

In the beginning cancer of the uterus is distinctly a local process, and when situated on the vaginal aspect of the cervix, can always be distinguished as an ulceration attended by rapid tissue proliferation and discharge. Cancer of the uterus is so common that all general practitioners see one or more cases yearly, and upon their recognition of the preclinical signs or early symptoms, the gynecologist must rely for favorable operative cases.

How, then, is an early diagnosis of such extreme importance to be made? Obviously, only by placing under strong suspicion even the slightest deviation from normal in menstruation. Never treat as trivial any of the early signs of cancer of the uterus and try to account for them by other than a malignant cause. A great responsibility is ours for the slight progress so far made in the early diagnosis of uterine cancer, and for this sad page in medical history, failure to make local examinations and delayed consultations are largely to blame.

As woman possesses certain organs, and plays a part in life peculiarly her own, we would naturally expect to find her subject to certain diseased conditions more or less dependent upon her anatomy, physiology and mode of life. The first two, the anatomy and physiology, we are taught in the medical school. But the mode of life and habits of life are constantly changing with each generation, and oftentimes with each woman from year to year.

Among primitive people she is notoriously free

from many of the diseases to which her sister living in our present day civilization is especially prone. As we ascend the scale of civilization, departing from a natural and adopting an artificial mode of life, we find that nature exacts due penalties for every transgression of her laws. The female among savage tribes has every advantage and opportunity to develop physical perfection; but how different in our modern system when the young girl is sent early to school and subjected daily to long hours of study, often in badly ventilated classrooms, for nine months of the year and this at the time of puberty, one of the most important periods of her life when plenty of outdoor exercise is particularly necessary. At the time of menstruation, carelessness and neglect is often directly responsible for many of its disorders, the proper physical and mental rest is not practised and a daily, vicious routine is gone through regardless of consequence.

The practice of the prevention of conception so prevalent today has a most deleterious effect upon the pelvic organs, as well as on the general and nervous system, while its twin sister, the criminal interruption of pregnancy, leads only too often to permanent injury of the uterus, tubes and ovaries.

Gonorrhea is responsible for many pathological lesions of the pelvic organs, leaving the tissues in such an impaired condition as to distinctly menace future health; and its existence, past or present, should always be inquired into.

In this highly specialized age in which we are living, with its mad rush for wealth, pleasure and excitement, health is only too often considered to be of minor importance; but health is the greatest asset one can have in any walk of life, and the success of the individual can, after all, only be interpreted in terms of health.

114 East Fifty-fourth Street.

The Heart and Circulation*

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The importance of the subject which we have for discussion may be appreciated when it is realized that last year organic heart disease killed nearly three times as many people in New York city as did tuberculosis. It killed more than twice as many as cancer, and more than half again as many as pneumonia. It is now the greatest single cause of death in the United States.

It is interesting to know that during the past fifty years the disease has increased in mortality forty-two per cent, while during that same period of time, tuberculosis has fallen forty-four per cent. Twenty years ago tuberculosis was the greatest single cause of death. Today heart disease takes its place.

We, unfortunately, do not know the whole story of heart disease, but it is now for the first time being considered and studied from the point of view of prevention, and facts are rapidly accumulating which will, I think, in the near future give us a ground work, a basis, upon which we may intelligently proceed toward the prevention of the disease.

It is becoming more and more apparent that like tuberculosis, it may often be considered communicable, not frequently but sometimes. Many cases are undoubtedly entirely preventable and some of them are wholly curable. I shall, therefore, discuss the general subject of heart disease, first, from the viewpoint of prevention, and second, consider some of the early signs and symptoms.

The main causes of heart disease may be classified as, first, general infections, particularly and chiefly rheumatic fever and syphilis. More and more as our knowledge concerning the great class of cardiovascular renal degenerations has developed, we have been impressed with the great importance of infections. Undoubtedly rheumatic fever and syphilis take the first place in that group.

Closely allied with this is the question of senescence, or old age, of sclerotic degenerations. Why do people die? Why do some of their organs give out? Is it simply because they have lived a certain number of years? No, I hardly think so. I prefer to consider it the result of a large number of infections or intoxications, each of which leaves its mark and finally results in extensive changes which lead to sufficient impairment of a vital organ to interfere with health or indeed with life.

So, I think when we consider old age merely, or the sclerotic degenerations, as causes of death and particularly of heart disease and arterial degeneration, we must think of it as the resultant of a large number of infections or intoxications throughout the existence of the individual.

Another group of causes are the poisons, alcohol, tea, coffee and tobacco. These, I think, are much less important than infections.

Another group are those which include poor habits, particularly indolence, lack of exercise, obesity, and occasionally extreme exertion without sufficient preparation therefor; and last of all comes the class of congenital defects of the heart regarding which we can probably do very little indeed. But the inference arises frequently, and more persistently, that they too, are the result of infections occurring during the fetal life.

The general infections are responsible for the greatest number of the cases of heart disease, variously estimated as seventy to ninety-five per cent. Of these fifty to sixty per cent. are rheumatic in origin, fifteen to twenty per cent. are syphilitic, and about fifteen per cent. apparently arise from focal infections, such as infections about the teeth, in the

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tonsils, in sinuses, or following the general infections such as scarlet fever, pneumonia, typhoid fever, influenza, and diphtheria.

It is obvious, then, that the rheumatic group is by far the most important, and in this group it is extremely important to consider some of the socalled allied rheumatic infections, particularly acute tonsillitis, chorea, torticollis, erythema nodosum, growing pains, and especially, a considerable group of cases of rheumatic infection of the heart, in which there is no conspicuous involvement of the joints. This occurs, as you know, chiefly among children; the younger the person, the more likely is that to occur; and many cases of rheumatic fever are overlooked because there is no conspicuous joint involvement, as that is generally considered a necessary accompaniment of acute rheumatic fever.

Is this rheumatic group communicable? It becomes more and more apparent that it sometimes is, and some studies have shown that as many as fifteen per cent. of cases of acute rheumatic infections are contact cases.

This at once leads to the conclusion that in acute rheumatic fever and other rheumatic infections the general aseptic technic of the sick room should be observed and that the patients should be isolated.

Dr. Haven Emerson has recently written that "cleaner mouths, fewer diseased tonsils, fewer neglected decayed teeth, earlier recognition of sore throats, and quick care of their treatment as serious infections, the considered and skilled attention to the little child with aching muscles and joints, too young to have rheumatism, kept up and about with growing pains, repeated examination of the heart after attacks of any acute infectious fevers in childhood, by such means will the number of acute rheumatic hearts be reduced."

Such among the important causes is syphilis. This is undoubtedly communicable, preventable, and curable. It is well to remember that the cardiac circulatory manifestations of syphilis usually do not manifest themselves for an average of seventeen years after the date of infection. It is a condition of extremely slow development, and it is quite remarkable indeed that whereas there is a special predilection for the syphilitic virus to involve and invade the aorta and the structures in close association with it, it seldom affects the vessels elsewhere in the body.

The poisons which I have mentioned, alcohol, tea, tobacco, and coffee, usually result in functional changes first, but if functional disturbances are long continued, they certainly may eventually result in obvious organic changes. Bad habits, lack of exercise and overeating, undoubtedly result in atrophy and degeneration of the heart muscle as well as of other muscles of the body.

It is obvious then that in heart disease the periodical health examination may be of great importance, for it may not only detect heart disease in its early stages or the earliest manifestations of cardiovascular renal disease but the causes may be recognized and eradicated, thus interrupting the progress of the disease. This applies particularly to foci of infection; and in addition to those in the head, namely, the teeth and tonsils and sinuses, it is important to remember other foci in the body, as for instance, in the lungs, chronic bronchial or pulmonary infections, chronic disease of the gall bladder, appendix, or intestines—often unrecognized—chronic infections of the rectum, the anus and the uterus, and fallopian tubes. All of these organs should be carefully searched in any comprehensive health examination.

In this association the question of tonsillectomy often comes up. Should tonsillectomy be performed or not? One gets various opinions and I know of no condition in which it is more difficult to be didactic, because I know of no direct evidences which will indicate or contraindicate a tonsillectomy. I do believe that where a person shows early manifestations of cardiaovascular or renal degeneration, the tonsils should be very carefully considered, and if they are of the type that is likely to harbor infection, or if infection is evident in (as shown by simply pressing upon them) then tonsillectomy should be carefully performed. Those patients who have had acute rheumatic fever, or several attacks of acute tonsilitis, should, in my opinion, have a tonsillectomy.

We know well that it does not always prevent recurrences of the infection; nevertheless, all statistics show that the frequency of recurrence has been lessened; and the infection is so important for the wellbeing of the individual in after years that no stone should be left unturned to prevent its recurrence.

Now, what are some of the early, or socalled preclinical signs of cardiac disease? In young people, especially those who have suffered with rheumatic infections, the signs generally precede symptoms. Frequently, however, symptoms precede signs, and this applies particularly to the elderly group of individuals. As Mackenzie has emphasized, it is extremely important to analyze carefully the subjective manifestations, the symptoms exhibited by any patient, particularly with reference to the heart and the circulation, and it is well to realize that certain symptoms in one person may carry no serious significance whatever, while in another it may be the first manifestation of a serious involvement of the heart.

So then, I would like to emphasize the great importance of a careful history and a careful analysis of any of the symptoms, relating to circulation, which may occur or develop in that patient's history. The most common symptom is, doubtless, unusual dyspnea, that is, dyspnea which is felt upon exertion which heretofore had not been associated with unsual distress. A choking sensation in the chest, particularly upon exercise, may be very significant. Some patients complain of their legs becoming weak, reporting that their legs become almost powerless after exertion. This exhaustion is a not infrequent forerunner of heart failure. One of the common early manifestations in the sclerotic type of degeneration is a sense of pressure behind the sternum. It is at first felt only upon exercise. Later on it may develop when the patients are quiet or particularly after having eaten a hearty meal. A slight dry cough may be significant.

One other point. I have seen a number of instances where the symptoms of heart failure were delayed for several hours, possibly twenty-four, after undergoing serious exertion. Do not expect

that symptoms will necessarily appear at once after the strain which has been placed upon the heart.

With regard to heart pain, stenocardia, or angina pectoris—the pain of heart disease is rarely severe; the terrible angina pectoris is unusual, but mild degrees of pain are common indeed and are often significant. Mild pains occur not infrequently in the group of cases which we class as neurocirculatory syndrome; on the other hand, they are frequent early manifestations of serious involvement of the heart.

If the pain comes on after exercise, and particularly after a hearty meal, it should receive very serious consideration. The pain is usually felt in the region of the precordium. It may, however, be referred to the epigastrium or the root of the neck or up into the throat and teeth, and it may be referred to either arm, even in the wrist occasionally, without any pain about the heart.

Paroxysmal dyspnea or cardiac asthma usually comes on at night, and sometimes following exertion, and simulates an acute attack of bronchial asthma; and it may be the first indication of serious heart disease. Edema of the legs may occur.

Palpitation is a not infrequent symptom. It may or may not be significant, but every case of palpitation requires careful consideration of the circulation. Fainting and vertigo are rather rare early manifestations of heart disease. Then the arrhythmias, of which the patient may or may not be conscious, may represent serious cardiac involvement. It is only by further study that one can determine that point.

We will now discuss some of the early signs of heart disease. The first step in the examination of the patient is to determine the size of the heart, and that is a difficult matter in many instances. It is particularly difficult in the obese and the emphysematous cases. The size of the heart would more generally be appreciated and recognized if all doctors took pains in locating the apex beat. The apex beat is not necessarily the point of maximum impulse. The apex beat is the lowermost and outermost point to the left at which either a visible or a palpable pulsation can be determined. This is usually half or three quarters of an inch outside the point of maximum impulse. Careful location of the apex beat gives an impression, indeed a decision, regarding the size of the heart which cannot be determined in any other way.

It is difficult to make out the size of the heart by percussion. In any event the stroke should be light, for heavy percussion leads to confusion.

In auscultating the heart, the last thing to think of is a murmur. Murmurs are not important in the diagnosis of heart disease, or in prognosis or as indications for exercise or other treatment. The important thing, in my opinion, is the quality of the first sound. The normal heart has a definite tone, a definite sound, one which we all recognize; it has duration, it has firmness, it has a definite quality. The qualities are lost early in disease of the heart muscle, and impairment of the quality of the first sound is often far more important than arrhythmias and murmurs. So I should say that the most important points to look out for in a careful examination of the heart are first, the location of the apex beat, and secondly, the quality of the first sound.

With regard to murmurs, they, of course, may or may not represent organic disease. It is important to subject every patient to exercise, because some murmurs, particularly the mitral presystolic murmur, are often not heard except under exercise. One should keep in mind the fact that mitral stenosis does not always give a distinct murmur, at least at intervals, but those cases almost always have a loud, short, sharp, snapping first sound, and that in association with some enlargement of the heart to the right may be highly indicative of mitral stenosis.

A further important aid is the x ray or the fluoroscopic screen; and every case in which there is suspicion of heart disease should be fluoroscoped or x rayed. It is only in that way that one can make out definitely the size of the heart; and the dilatation of the aorta will, of course, be generally missed. A further aid and most important is the electrocardiograph.

Electrocardiograms often reveal deviations from the normal which can not be detected in any other way, and which may well be regarded as preclinical signs of heart disease. So then, these patients who have suggestive symptoms and more or less definite signs of heart disease should generally be x rayed and electrocardiogrammed.

Just a few words with regard to arteriosclerosis and hypertension. In general it may be said that the causes of arteriosclerosis are similar to those of heart disease, particularly the sclerotic type of degeneration; but after all I don't believe we know very much about it.

I would like to emphasize the fact that the most marked cases of arteriosclerosis are usually not associated with hypertension. The involutionary type of arteriosclerosis is never associated with hypertension; and the absence of hypertension, or the presence of hypotension does not rule out arteriosclerosis.

Arteriosclerosis is determined by a careful examination of not only the radial vessels, but also of the other accessible vessels of the body. Unfortunately there are not many. I like particularly to look at the brachials. A throbbing, pulsating, tortuous brachial artery often emphasizes the changes which have taken place more than does palpation of the radial vessels.

Another most important group of vessels is the retinal, and the ophthalmoscope should be employed by practitioners of medicine far more generally than it is. It is not difficult to use and in this particular field yields very valuable information. In cases in which there is a question of arteriosclerosis, the eye grounds should be examined by some competent observer, generally perhaps an ophthalmologist.

I am sure that we know little about the causes of hypertension. Further than the fact that there is a pronounced hereditary tendency, I believe we know practically nothing concerning the etiology. Essential hypertension is, however, an important consideration in clinical medicine. When presented with a case of hypertension, the first necessity is to determine the functions of the kidneys. That is accomplished by chemical examinations of the blood and by a test of the phthalein excretion. A very valuable test, and one that yields early information of

renal disease, is the two hour renal test of concentration. It consists in gathering specimens of urine every two hours during the day and saving all of the night urine in one specimen. If there is a variation of only five or six points in the specific gravity of the specimens there is the probability of renal degeneration. If, on the other hand, a person shows wide variations in the concentration of the urine, say ten or more points, it may be fairly well assumed that that person is not suffering from any serious degree of renal disease.

Having ruled out renal disease, then one may regard the case in question as one of essential or idiopathic hypertension. How should we instruct these patients with regard to their future? I think the first point is with regard to further examinations. They should be told specifically when they should report and with what frequency for further examinations. Any patient with heart disease should be examined at least once in three months. Of course, more advanced cases should be examined much oftener. Cases of essential hypertension may not necessarily be examined so often, but they certainly should be carefully examined at least once in six months.

The mode of living should be taken carefully and fully into account. What influence may the occupation have upon breaking down these tissues which have become somewhat impaired? Occupations should be modified so far as possible in order to spare them these diseased tissues, for, after all, our therapy in diseases of the cardiovascular renal system is chiefly one of sparing,—reducing the functional activity so far as is consistent with a reasonable degree of activity.

Then comes the question of follow up. Every first class hospital service has a well organized follow up system, whereby patients who have been operated on are requested to return at definite intervals for observation; and if they don't appear, they are followed up and brought back. Some follow up their medical cases as well.

I am unable to understand why we individual practitioners of medicine should not do the same thing. If these patients whom we have instructed to return to us once in three months, or once in six months, or once a year, do not do so, then then should be followed up. They should be card indexed, and we should send out cards requesting these patients to return to us at the proper date. I am quite sure that we have a false sense of modesty in not doing so at the present time, and we will not discharge our obligations to the individual or to the community unless we see that they are properly guided and instructed and cared for.

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The Nervous System

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The essence of preclinical neurological medicine is a clear knowledge on the part of the examining physician of a mode of attack, how to examine the patient suspected of having some frailty in the nervous system.

I think most doctors accustomed to the fourth dimensional point of view of neurology have not equipped themselves with a mode of attack for the nervous system examination. They understand perfectly how to set about finding out whether an individual has anything the matter with the lungs, how to auscultate, inspect, percuss, and perhaps even take a tracing of the heart rhythm; but their routine of neurological examination has not been developed. They look at the patient's pupils. If they are insurance physicians, even this may be left undone! I have never had my pupils looked at in a life insurance examination. The knees may be tapped perfunctorily and the rest of the matter goes by lucky chance.

If you desire to find out the small beginnings of neurological disease, you have to make a careful neurological examination. I can only indicate an outline of this in the space at my command. It consists in getting a complete, careful chronological cross examined history of the present condition, and a careful examination of the previous health and of the family history. Then have the patient remove all clothing. An illustration of that was a patient Dr. Blank sent me a little while ago, with an obscure set of symptoms; I won't go into them now, though they are interesting. He was a man of some fifty odd years; I undressed him, went over him carefully for twenty-five minutes, could find no reason why he was getting shortsighted at the age of fifty, for the first time, why he was getting deaf, why he was dizzy, and why he had headaches. Then I discovered that he had a cleverly made wig, and, having taken off all the other clothes, I asked him to take off his wig. He took off his wig, and underneath was the diagnosis. He was a case of Paget's disease of the skull. It is an illustration of the necessity for thorough examination and not for taking the patient for granted and trying to inspect him through the opaque medium of his clothes—or of his wigs.

The approach then should be through a careful chronological history, and perhaps diagnosis can be done very often in neurology by history. It can never be done without that.

Then the cranial nerves in point of order, with each of the functions of the cranial nerves examined. I can't go into what they are, of course; it would take many lectures.

Then the motor system should be examined for power at every joint, tone of muscle, atrophy of muscle, whether there is tremor, adiadokokinesis, or what not, incoordination of movement, whether

movement be rhythmical or broken up, decomposed into its several elements. Added to that as regards the legs are flexion and gait. Again, undress; I emphasize that.

Then the reflexes, each one of them done carefully and put down in every case the same way. Unless a technic be developed by each doctor, he will invariably forget the minutiæ of a neurological examination.

Then at the end there should be a sensory examination covering peripheral distribution, spinal sensory segments and radicular groups. When I say radicular groups, it may seem as though I were paying too much attention to the little things, and yet I assure you a very large number of people have come under my eye who have been in the hands of genitourinary surgeons because they have bladder trouble, and they often remain, I am sorry to say, in the hands of genitourinary surgeons for quite a long time, and all the time the third, fourth and fifth sacral root areas, being a saddleshaped area on the buttocks, were anesthetic, showing that it wasn't the man's genitourinary apparatus that was at fault, but the spinal innervation of the bladder; this could have been revealed by an examination of the radicular system and by an examination of his reflexes. Remember, in sacral spinal root disease the knee jerks may be present, but the ankle jerks gone; so the ankle jerks are of equal importance with the knee jerks.

Furthermore, the earlier signs of tabes, for instance, may be a little tendency of the feet to "go to sleep," and an absence of the ankle jerk with the retention of the knee jerk.

Furthermore, in the pupil known as Argyll-Robertson, only one type is usually understood—the pupil which reacts to convergence and is fixed to light; but the first stage of an Argyll-Robertson pupil is a sluggishness to light and a briskness to convergence. The second stage is a fixedness to light and a briskness on convergence. The third stage is fixedness to light and sluggishness on convergence, and the fourth stage is fixedness to every form of stimulation.

So that all disease, of course, is a progression, a slow progression, and if you pay attention to your technic of examination, you will discover the small things which are hidden on most routine examinations; and neurological examination technic has usually not been developed by the average practitioner.

Of course, it is a satisfactory thing for us neurologists that this is so; by that we live! I shan't elaborate on neurological examination technic because it would be really impossible to enter any other field were I to do it justice; nor could I do it justice in the time, so I shall go on to a few headlines simply to suggest to you matters apparently not of importance at the moment but important in the future welfare of the patient.

The question of nervous children is constantly coming up to the average practitioner—insomnia in children, night and day terrors, stammering, habit spasms; and the difficulty of diagnosing whether a given movement in a child is a habit spasm or chorea. I avoid the word tic, which is a French word, though more commonly used by us than the English habit spasm, because tic is not to our ears suggestive of the meaning and origin of the disease.

As between habit spasm and chorea, it is easy enough to form a correct opinion in most instances. Habit spasm is confined, certainly in its early stages, to a particular group of muscles. It is a purposive movement, the purpose for which has been lost; that is to say, if I make a movement of my neck because I have a high, chafing collar, I am doing a purposive, rational act. If I replace the collar with a silk muffler and I continue to chafe, I am having a habit spasm. If I am unable to stop that movement by voluntary power, I am having a habit spasm with a grave prognosis. Choreic children have nonpurposive movements which are not uniformly confined to a single group of muscles. This is the broad distinguishing feature between the two diseases.

It is worth while here to put a word of warning in the mind of doctors on the influence of the movies, on children. Doctors are often asked for an opinion as to whether a child should be allowed to go to movies. Responsibility lies a great deal in our hands, because we in our modern capacity are not merely doctors; we are publicists and educators and occasionally priests. Our relationship to the oncoming generation is one of prime importance. We can advise parents wisely regarding the amusements and extramural activities of children, extraschool activities of children, and one word of warning I think ought to be spoken by us against movies of an exciting character. We see constantly children with night terrors and day terrors and insomnia following prolonged movie debaucheries.

I would like to mention a word of warning, too, regarding the significance of sudden anomia, sudden difficulty in naming in middleaged individuals. I say sudden because a difficulty in finding the right name is, of course, a physiological condition in advancing years. When it becomes quite pronounced, it is of very grave importance. It may mean that a temporosphenoidal vascular insult has occurred, or that an arteriosclerosis of vessels in the temporosphenoidal region exists. Nearly all cases of jargon aphasia go for a time undiagnosed, and when they are pronounced and the individual talks fluent gibberish, he usually lands, through a medical agency, in a psychopathic institution. The patient is sent there with the idea that he is insane, whereas, of course, he is not insane, unless anger be a sort of madness; he is exceedingly angry at being taken for insane when his mental processes being clear to him, he finds himself incapable of making them clear to others.

A word of warning, too, with regard to pains. Constant back pain is to be looked upon with suspicion—in the young as regards tuberculosis of the spine; in middle age as a possible carcinoma of the spine. If the latter be suspected, please do not forget to examine the testicles and prostate, which may be the seat of the primary focus and are often forgotten; or the rectum, which may, of course, be the seat of the carcinoma, the primary lesion being very small and the secondary lesion only presenting itself as pain. I have seen cases with back and root pains lasting ten, fourteen, and eighteen months, with negative x ray examinations repeatedly done; then within three weeks a tremendous efflorescence of

secondary deposits seen with the x ray in the spine and in the ribs. So, spinal pain which lasts, without any evidence of cause, for several months, is to be regarded with great suspicion.

DISSEMINATED SCLEROSIS

We now come to another organic condition which is very usually missed in its inception, that is, disseminated sclerosis, a disease which I haven't the slightest doubt has materially increased in incidence in this country in the last fifteen years. There are two diseases which, under my observation (it being nearly fifteen years since I took up work in this hemisphere) I have seen increase; one is disseminated sclerosis, and the other is a disease which hardly exists in the general textbooks and is common, namely, subacute combined sclerosis of the spinal cord. When one says combined, one means that both the posterior and the lateral columns of the spinal cord are involved. Disseminated sclerosis, of course, occurs in a young person in most instances; it has a very definite age incidence; the beginning may be a localized numbness in one or both hands, a transient diplopia or a slight difficulty in holding urine.

Those symptoms may be present for possibly a week or two and may be followed by perhaps three months of good health. Then there comes perhaps an acute weakness of one arm, which lasts for two or three weeks and passes off, and the invariable diagnosis of such an individual is hysteria. Nearly all cases of disseminated sclerosis are called hysteria until they are so palpably organic that the patients can hardly move about. Remember diplopia is never hysterical; and neither is incontinence of urine. These are not mental or emotional phenomena, they are organic phenomena, and their interpretation should be along organic lines.

Subacute combined sclerosis of the cord is a disease of middle life, usually early middle life, and is characterized by a very insidious onset and is often also called hysteria; more often perhaps it is called nervous breakdown. It is characterized by numbness and tingling in the hands and in the feet as its first symptom, followed by a progressive difficulty in station and slight staggering in gait; a difficulty of knowing what is in the hand without looking at it. A man finds that he can't take change out of his pocket, can't recognize change without taking it out; because he has astereognosis socalled, in his fingers, he hasn't the proper sense of position.

When such a person is examined, it is often found that the knee jerks are very much exaggerated; the ankle jerks are lost, and the plantar reflexes are of extensor (pathological) type. The next procedure on the part of the doctor, when he has a suspicion such as that in his mind, is to examine the blood. He will there find perhaps a secondary anemia, perhaps the beginning of pernicious anemia, if he be a little late on the trail. If he be forehanded and should suspect subacute combined sclerosis, he should examine the gastric contents, because almost invariably the first link in the chain of events which ends in subacute combined sclerosis of the cord is complete absence of free hydrochloric acid in the stomach. That may be the fundamental origin of the evil—absence of free hydrochloric acid in the stomach, the development of a secondary anemia, finally pernicious in character, and the breakdown along systemic lines of the posterior and the lateral column of the spinal cord. This disease lasts about three years when untreated, under which circumstances it is usually fatal; it is hardly described in the textbooks, and it is becoming very common. I see it almost every week, new cases of it, in our service of the Neurological Department of Bellevue Hospital, and also in private practice.

EPILEPSY

To go back to children again, the importance of momentary loss of consciousness cannot be overemphasized. Such attacks are usually belittled by the parents, and they cannot be too much regarded by the physician. Such loss of consciousness is epileptic. Epilepsy is not a disease, it is a spectrum having many colors, one color merging into another. On one end of the spectrum is migraine. Further on are uremic convulsions, and convulsions of eclampsia, then convulsions of the petit mal variety and the major epileptic fit; possibly not very deep in the ultraviolet sector of this spectrum there are certain types of socalled hysteria. Epilepsy is a paroxysmal involuntary discharge of nervous centres, accompanied by an alteration of consciousness. Epilepsy is not simply a falling down in the street in a fit. It is a much larger and more various condition than that. And furthermore, three fourths of epilepsy is curable, absolutely curable. You must enlarge its range in order to understand the phenomena, but you increase enormously thereby your therapeutic armamentarium and your therapeutic possibilities.

NEUROSES BRED IN INFANCY

The preclinical stage of a great deal of neurological medicine lies in the nursery. That is really where preclinical neurology ought to be studied. I am not talking now of the organic diseases, the dangerous involvements of the nervous system; all such, of course, belong to general medicine and to neurological medicine, for neurology is not a cloistered thing living by itself—it is internal medicine, and more than internal medicine. You can't really practise neurology without being a doctor more or less, although the public imagines that neurologists only look after people "with nothing the matter with them," which is the popular pathology of a neurosis.

The neuroses are bred in the nursery; they are bred in us through our ancestors, of course, to start with. We can't always correct our family tree, but we can see to it that parents get decent instruction as to how to bring up their children. Education and discipline in youth is the greatest prophylactic agent against the neuroses. Undoubtedly the strength of the Chinese and the strength of the Hebrew nation or people have lain in their ancestor worship—the Chinese in their regard for their ancestors, their regard for tradition, their regard for the principles of their civilization; and the Hebrew people who have stood two thousand years of bitter persecution all over the world, are still one of the most virile races in the world, despite their having to attach themselves to this nation and that. They wrote into their code the fifth commandment, that we should honor our father and our mother. Therein lies one of the

sources of the strength of the Jews. And when they begin to forget the fifth commandment, they will become as weak as are the Gentiles!

The power of Rome largely came from the tremendous authority exercised by the Roman father over his household. It was brutally written down in the law, that the father had power of life and death over the household. He had. He occasionally exercised it, but very rarely. The fact, however, that the son acquiesced in that discipline gave him a regard for authority which made Rome the mistress of the world. It was such regard for authority and for tradition and for principle that is the inherent strength of nations and is the great preventive of neurotic behavior.

I would say that we doctors should teach to young people simple hygiene, periodical visits to the doctor and to the dentist, and complete absence of health contemplation beyond these precautions. Let no one try to live wrapped up in cotton wool, but fare out bravely into the world—careful, but not too careful.

20 West Fiftieth Street.

The Gastrointestinal Tract*

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It is our privilege to present the periodical health examination point of view. Physicians are accustomed to have patients suffering from acute diseases present themselves for examination and treatment, but it is unusual for them to have a supposedly healthy person come to them for advice. Inasmuch as the patient comes for the purpose of having better health, he will be spoken of as a "health client."

In the first place, the patient wishes to know if he has any acute disease. In addition he wants to know if he has any tendency toward disease. And finally, he desires to be advised as to how he may have positive health—that is, so that he may be one hundred per cent. efficient seven days in the week. Perhaps he has noticed that his business partners are efficient, one hundred per cent. efficient, every day of the week, whereas he finds himself to be only eighty per cent. efficient on some days, and on other days perhaps he is barely fifty per cent. efficient.

This talk is to be suggestive, to start us thinking along the lines of preclinical signs of disease, and is not to be a survey of the entire subject of gastroenterology.

PHYSICAL SIGNS

Imagine your health client sitting before you. You first observe his constitution, the contour of his face, to note if he has any hereditary tendency to disease. Perhaps the contour of his face will suggest a predisposition to ulcer of the stomach or to liver disease. Perhaps there is an icteroidal tint to his skin, which will suggest an investigation of the liver functions. Sallowness leads one to think of intestinal toxemia. Redness of the nose or an eczema indicate that the patient is indulging too freely in tea, coffee, sweets, or spices, which cause hyperacidity. You make the same observation of his eyes, having in mind the possibility of toxemia.

If the patient's tongue is bright red and fissured we think at once of acidity of the stomach, which, if uncorrected, might lead to ulcer. On the other hand, a heavily coated tongue would indicate a condition which might lead to gastric catarrh or to cirrhosis of the liver. If he complains of a metallic taste and his breath is heavy, one should be on the lookout for indicanuria.

When the client lies upon the examining table, the contour of his abdomen is noted, remembering that the long, narrow abdomen predisposes to visceroptosis. It is perhaps easier to divide the abdomen into four quadrants by lines radiating from the navel to the ensiform cartilage, the symphysis pubis, and the two crests of the ilium.

In the upper right quadrant, diseases of the liver, gallbladder, and duodenum are thought of; in the upper left quadrant, the spleen and stomach are considered. In the lower right corner, the appendix and cecum are examined, and in the lower left quadrant, the sigmoid. The tender points indicating ulcer of the stomach and disease of the gallbladder, appendix or sigmoid are studied.

It is important to make a rectal examination in the search for new growths, hemorrhoids, and fissures, and to examine the sphincter. So much in brief for the objective signs.

SUBJECTIVE SYMPTOMS

The more important subjective symptoms which will lead the health client to consult a physician are lessened efficiency due to some form of intestinal toxemia associated with constipation, many patients being constipated and unaware of it. It is deemed advisable to have every patient take the carmine test in order to determine if colonic stasis exists. This may be done by giving five grain capsules of carmine. If specks of carmine are noted in the feces after forty-eight hours, there is evidence of stasis. In marked cases specks of carmine will be noted in the stool for four or five days following the ingestion of the capsule.

Heartburn is a most important preclinical sign of gastric disease, particularly those cases which require bicarbonate of soda for relief. Many cases of ulcer may be prevented by curing heartburn at its inception.

Gas in the stomach or intestines indicates faulty habits of eating, which, if uncorrected, will lead to organic gastrointestinal disease.

Headache, particularly of the migrainous type, is often an indication of a faulty digestive function.

*Read at the New York Academy of Medicine on January 6, 1925, as part of a symposium on preclinical signs of disease, with special reference to the management of the health examination, held under the auspices of the Medical Society of the County of New York, Committee on Periodic Health Examination.

Vertigo and socalled biliousness are symptoms which should be studied carefully. Diarrhea, a tendency to have liquid movements, if not corrected, will frequently result in a well marked colitis.

A capricious appetite is a warning that something is wrong with the digestive tract. Periodical or constant mental depression is often due to absorption of toxins in the intestinal tract. Consistent loss of weight is a tendency that requires investigation.

In the periodical health examination the urine and feces should be carefully examined. Occasionally you will find intestinal parasites in the feces. Examination will be of the greatest value in determining the extent to which various types of foodstuffs are being assimilated. It is functional disorders for which we should constantly watch, or colonic stasis, colitis, pancreatitis, and hepatointestinal toxemias. These functional disorders may be diagnosed by a careful examination of the patient together with the proper evaluation of the symptoms.

The organic diseases, which we wish to avoid by observing the preclinical signs of disease, are ulcer of the stomach or duodenum, colitis, cholecystitis, and appendicitis. Ulcer, because of its frequency, is, perhaps, the most important. Many cases of ulcer may be avoided by advising the health client as to the importance of correcting his diet so as to avoid hyperacidity.

Let me illustrate by telling you of a physician who had suffered from hyperacidity to such an extent that he had acquired the bicarbonate of soda habit. He suffered from excessive appetite which would become so pressing as to oblige him to take his meals a little bit earlier each day. After a time he found relief by taking food between meals and he always had a bottle of bicarbonate of soda tablets on his desk. On his way to a medical convention where he was to read a paper, on the train he noticed that he passed a large tarry stool. He continued to the meeting, read his paper, and upon his return to New York found, upon x ray examination, that he had a duodenal ulcer which had been the source of his hemorrhage. This necessitated his remaining four weeks in bed under a prescribed diet in order to cure the ulcer.

If this physician had had a periodical health examination and had the dangers of neglecting the symptoms of hyperacidity been pointed out to him and the tendency corrected by proper diet and habits of eating, the condition undoubtedly would have been avoided. This is an especially large field of usefulness for the periodical health examination.

Gallstones may be prevented by treating cholecystitis in its inception. Symptoms of cholecystitis should be discovered during the periodical health examination. Many of them are so slight as hardly to warrant the patient consulting a physician for relief. Perhaps he only suffers from gas, a feeling of fullness after eating, or slight indigestion. On examination, a slight tenderness over the gallbladder is noted.

In many of these cases relief is obtained by keeping the colon empty or by the various methods of irrigation or drainage with a duodenal tube. When one realizes that every case of cholecystitis is potentially a case of gallstones, the importance of its recognition in its inception is apparent.

Many cases of appendicitis could be avoided by attention being paid to cecal stasis, which may exist without producing enough symptoms to warrant a patient consulting his physician, but by means of the periodical health examination these cases will be discovered.

It is the duty of the examiner to be on the alert to discover cancer of the gastrointestinal tract when it is so minute that it can be completely eradicated. Some years ago in one of the sections of the American Gastroenterological Association, the question of early diagnosis of cancer was brought up for discussion. The surgeons criticized the physicians for not diagnosing cancer early enough so that it could be completely removed. A physician promptly replied that it was impossible for a physician to diagnose cancer before the patient presented himself for examination.

Cancer in the beginning presents very few signs and symptoms, and periodical health examinations will afford an opportunity to discover these cases early enough for their complete eradication. A number of years ago when an intensive campaign for the early diagnosis of malignancy was under way, and all the doctors in the dispensary were making unusual efforts to discover malignancy early, one of the employees of the hospital presented himself at the dispensary for an examination. He said he was perfectly well. He simply dropped in because of his wife's insistence, who said he had been a little fussy about his food recently, and that she did not think he had been eating quite as much as ordinarily. He disclaimed having any symptoms at all. Upon our examination we were greatly surprised to find that he had an inoperable carcinoma of the stomach the size of an orange. If the dispensary had had a department for periodical examination, that man's growth would have been discovered in time for a complete eradication.

Many cases of carcinoma of the rectum produce so few symptoms that they will go unrecognized unless regular examinations are made.

REMOTE SYMPTOMS

Just a few words about the gastrointestinal symptoms of organic disease outside of the gastrointestinal tract. Patients suffering from nephritis come to the dispensary complaining of nausea and loss of appetite. Minor gastroenteric symptoms will reveal cardiac decompensation. It is also surprising how many cases of incipient pulmonary tuberculosis present gastric symptoms before any other sign of the disease develops. Occasionally a coated tongue, heavy breath, sallow skin, irregular action of the bowels will reveal a case of incipient cirrhosis of the liver.

It was my purpose here to suggest the periodical health examination point of view of discovering the tendency to gastroenteric diseases by noting the preclinical signs of diseases, so that we may properly advise our patients. Our reward will be the satisfaction of having saved our patients from many preventable diseases. We have been accustomed to think only of communicable diseases as being the preventable ones. Prevention of disease is just as worthy a mission in life as its cure.

525 Park Avenue.

Practical Therapeutics

MERCUROCHROME IN AMEBIC DYSENTERY

*Case Report**

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Washington, D. C.

Reports all over the world now attest the value of emetine in the treatment of the acute manifestations of amebiasis, but unfortunately note the inefficacy on the encysted forms of amebæ.

The chief factor in the spread of amebic dysentery would seem to be encysted amebæ in the stools of convalescents or healthy carriers rather than the motile ones in dysenteric stools. Now according to experiments of Sellards and Baetzer these encysted amebæ were found chiefly in the cecum. The lesions rarely extend beyond the ileocecal valve.

Many of these cases run a chronic course and emetine cannot cure the ulcerative lesions or reach the encysted amebæ, therefore these lesions, and the accompanying colitis will not yield to emetine. When this period occurs we have to resort to other means as topical applications, appendicostomy and colonic irrigations. Many drugs have been recommended for colonic irrigations such as quinine, muriate, protargol, thymol, acetozone, infusion chapparo amargoso, and others.

A long period of rest in bed and a nonirritating diet, free from coarse foods and cold foods, are not only beneficial, but essential as the success of the treatment and spread of this disease depends upon ridding the intestinal passageway of these cyst carriers.

Now as to irrigations given, time and time again various physicians will order high enemas as irrigations, when it has been proved by x rays and by experimentation that the rectal tube cannot be passed far enough, so high enema is a misnomer.

A few physicians engaging in this work have passed special made tubing around into the cecum and it can be done by using a Norman tube, but the procedure is unwarranted, as it is dangerous in inexperienced hands, and is unnecessary.

In the treatment of a patient now under my care, I am using a Norman tube with a Hughens valve and the irrigating fluid by taking advantage of antiperistalsis is placed into the entire lower bowel and cecum, with very little or no discomfort to the patient.

As mercurochrome 220 solution freshly prepared is both antiseptic and markedly penetrating, as well as healing without irritation, I began using this drug, employing a five per cent. solution diluted, both by colonic irrigations and mouth administration, with the following result:

CASE.—I. K., a colored male, twenty-eight years old, entered the ward on November 11, 1924, with a history of dysentery of several years' duration. He had lived in the tropics and in Panama he passed bloody stools. The diarrhea was so severe and tenesmus so marked that a prolapse of the rectum developed, which had to be reduced.

Physical examination showed a poorly developed and nourished patient with hypertrophic tonsils and a corneal opacity of the left eye. The right pupil reacted sluggishly to light. The inguinal glands were palpable, but not tender. At first there was slight tenderness upon palpation elicited over the lower margin of the liver. This disappeared later. Complete physical examination was otherwise negative, X rays of the chest revealed no pathological conditions in the lungs, the heart shadow was of normal size and position, and the arch of the right diaphragm was not changed. A series of x rays of the gastrointestinal tract likewise was negative. Blood counts: 1, leucocytes 17,600, eosinophiles 15 per cent.; 2, hemoglobin 61 per cent., red cells 4,960,000, white cells 28,800, polymorphonuclears 68 per cent., lymphocytes 28 per cent., transitional 1 per cent., eosinophiles 3; 3, white cells 14,400, polymorphonuclears 42 per cent., lymphocytes 32 per cent., eosinophiles 26 per cent. The last three reported were normal. Ten uranalysis specimens were negative. The weight chart showed on November 12, 1924, 113 pounds; December 5, 1924, 116½ pounds; January 3, 1925, 124 pounds, and March 7, 1925, 127½ pounds. Complete spinal fluid examination and blood Wassermann tests were negative. The Widal, blood cultures, and malaria blood smears were negative.

Repeated examinations of the feces were at first reported entirely negative. Later examinations of fresh warm liquid specimens showed the presence of Entamœba histolytica in large numbers, some containing red blood cells, also Balantidium coli. A few specimens examined revealed the presence of cysts of Entamœba histolytica. The last specimens examined were entirely negative.

At first with all the laboratory findings and physical findings unproductive of any exciting etiology, and with normal temperature, pulse and respiration, but with a leucocytosis persisting, and the presence of a marked eosinophilia and diarrhea, made it quite interesting to discover the cause of these findings, and on November 26, 1924, Entamœba histolytica in large numbers, some containing red blood cells, and Balantidium coli were reported by the protozoologist upon examination of warm stools. Emetine hydrochloride was given hypodermically to kill the free forms of amebæ; about six doses only and frequent flushings of the rectum by normal saline were given at first daily. On December 5, 1924, colonic irrigations with mercurochrome were started.

Administration of mercurochrome by mouth began December 17, 1924. No ill effects were found following the use of the drug and no symptoms showing mercury irritation either of the kidneys or gums appeared. One month after starting this treatment the patient had two normal bowel movements daily, instead of a continual bloody diarrhea, gained ten pounds in weight, there was no blood in the stools and the blood counts became normal.

At this writing the patient is up and about the ward

*Read before the Clinicopathological Society of St. Elizabeth's Hospital, Washington, D. C., March 20, 1925.

daily, eating a regular diet and his temperature, pulse and respiration are normal. No subjective or objective symptoms exist, the bowels move once daily and feces examinations do not show the presence of amebæ.

COMMENT

As these cases are not encountered very frequently in this locality further attempts to gather any series for more work with this drug and apparatus will probably be futile.

In this paper I wish to present to the profession one drug and a method of approach which I feel will compensate for any effort expended, which appears satisfactory and justified in the treatment of amœbiasis.

3624 Davis Street, N. W.

RESUSCITATION WITH ALPHA LOBELIN

A New Specific Stimulant of the Respiratory Centre

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The herb lobelia inflata was discovered in America and first described by the personal physician of James I of England. Early explorers seem to have accepted the high therapeutic values attributed to it by the American Indian and so introduced it as a drug to Europe. It fell upon bad days, when it was praised as a panacea by charlatans but was nevertheless accepted by the medical world in the form of a tincture as a remedy for asthma. There are undoubtedly still many of the older practitioners who have kept it on their pharmaceutical list although in general the drug has been abandoned as quite untrustworthy. This despite the efforts of Dreiser, who in 1889 isolated a mixture of amorphous alkaloids of the plant and studied it pharmacologically. Unfortunately his preparation was not pure and its stimulation of the vomiting centre rendered its use inadvisable.

In 1915 Henry Wieland, the chemist, now professor and head of the department of chemistry of the University of Freiburg, succeeded in isolating the alkaloid alpha lobelin and lesser alkaloids in crystalline and hence pure form. The most soluble salt was found to be the hydrochlorate. His brother, Hermann W. (then privatdozent at the above school), now professor of pharmacology at the University of Koenigsberg, investigated the alkaloid pharmacologically (1). In a series of shrewdly planned experiments he proved the alkaloid to be a direct stimulant of the respiratory centre with a truly remarkable latitude between the toxic (exitus letalis could not be obtained) and therapeutic doses and with unimportant secondary effects when given under proper conditions. This stimulation was further shown to be capable of overcoming profound intoxications of the centre. The drug itself seemed to be barren of cumulative and habit forming qualities. Vomiting, it may be added, was never observed even with enormous doses.

In a rabbit Hermann Wieland secured an increase of respiratory volume of exactly 459 per cent. This increase was shown by the insertion of a gas meter in the path of inhalation, and the values were worked into a curve. The rabbit weighing 2,600 grams was anesthetized with 1.5 grams urethan to each kilogram of body weight. At 11.09 morphine 0.004 g. was given by intravenous injection. At 11.52 alpha lobelin 0.006 g. was injected subcutaneously. The respiratory volume rose in the first ten minutes after the injection from seventy-four c. c. to three hundred c. c. and reached by slow continued rise a maximum of three hundred and forty c. c. after thirty minutes.

From this point it fell again slowly. One and one half hours after the injection the effect of the alpha lobelin seemed to be at an end. The respiratory volume was then one hundred and thirty c. c. as against seventy-four c. c. in the beginning and remained throughout the whole further course of events at about this level, considerably above the initial volume.

Clinically alpha lobelin was first tested in the Children's Clinic of the University of Freiburg by Eckstein and Rominger (2). The laboratory results were confirmed and brilliant results were obtained in cases of central respiratory depression due to a number of causes such as chloral hydrate poisoning, respiratory collapse of decomposition (marasmus), asphyxias during pneumonia, asphyxia neonatorum and meningitis. The publication was given additional weight by the careful tracings of the respiration by Eckstein, who is a trained physiologist.

Since then a considerable literature concerning alpha lobelin has developed—in Europe. The first American article about lobelin was published by Dr. K. Peters (25).

In general the conclusions of Wieland, Eckstein and Rominger have been accepted by all and only the minor matters of dosage and methods of application as well as minor indications have been disputed. All the authors concur in the statement that alpha lobelin is the one drug especially indicated in cases of central respiratory depression. All agree that the results obtained must even by the cautious be often termed spectacular. Hellendall (3) and Bonsmann (4) have published cases which illustrate the remarkable value of alpha lobelin as a physiological antidote to such powerful respiratory poisons as morphine and scopolamin. Puppel (5) and Hoechstenbach (6) found that, after failure of all other methods of resuscitation, alpha lobelin succeeded in restoring normal respiration in cases of respiratory collapse in the course of general anesthesias. Carbon monoxide poisonings were treated by Behrens and Pulewka (7) with the same results. Asphyxia neonatorum, if the above premises be true, must represent an ideal indication and has been found to be such by Miltner (8) in Doederlein's Clinic in Munich and by Schumacher (9). Miltner had those cases which did not respond examined postmortem, and found in every case severe anatomical disturbances which precluded life. Grill (10) in a mining district found that in the state of shock, which followed upon severe hemorrhages or traumas, the respiratory collapse was relieved by alpha lobelin. In cases of pneumonia or laryngeal stenosis where the continued saturation of the blood with carbon dioxide has depressed the centre, Ochsenius (11), Barilari (12), and Haas (13) found alpha lobelin of vital service in helping the patient over the critical stage of the disease. Wieland orig-

inally advised a maximum dose of 0.003 g. (one twentieth gr.) for children and of 0.01 g. (one sixth gr.) for adults to be given subcutaneously. This alone precludes the possibility of depressions of the vagus and vasoconstrictor nuclei; though these are slight in physiological doses, yet at critical stages of a disease they might perhaps be of importance. Moreover, he has shown that the subcutaneous injection approaches closely the ideal of a transfusion of a high dilution of alpha lobelin (depot action). This insures a steady push of the drug for one half to one and a half hours. Thereupon the injection may be repeated many times with no apparent change in the action. The tendency among the clinicians cited above has been, however, to make more use of intravenous indications because of the rapidity of action and secondly because of the poor circulation of many of the patients. In the latter case the injection may be repeated within three quarters of an hour.

One of the present authors had the privilege of taking part, in 1921, in the first of ninety clinical tests of alpha lobelin in the Children's Clinic of the University of Freiburg, and from these obtained the definite impression that alpha lobelin is a drug of no less striking action than strophanthin. There are two cases, hitherto unpublished, which were to his mind particularly conclusive.

Case I.—G. M., aged four years. Laryngeal diphtheria, which despite large doses of antitoxin, sedatives and steam inhalation had progressed to a condition which indicated a tracheotomy operation. Ether oxygen anesthesia. Superior incision. Just after incising the trachea, the patient suddenly stopped breathing. Aspiration of the trachea with suction pump and artificial respiration useless. Patient highly cyanotic, pulse small and rapid, hardly palpable. Several minutes after collapse, alpha lobelin was injected (0.003 g. in one c. c.) under skin over pectoralis. Within one minute the patient drew an abnormally deep respiration and then settled down to normal respiration. Operation resumed. Further course uneventful to recovery.

Case II.—T. M., aged twelve years, male. Idiot, otherwise healthy, under observation in private ward. In order to diagnose a possible luetic etiology—for therapeutic reasons—a lumbar puncture was undertaken. No anesthesia. The patient resisted with all the animal violence of the idiot. Just as the first drops of fluid were obtained, patient ceased breathing. Immediate cyanosis, pulse good. Injection of alpha lobelin subcutaneous 0.003 g. One and a quarter minutes after injection spasmodic breathing suddenly set in and settled down within a short time to normal type. Further course without interest.

At the basis of this experience the drug was tried in the Newark Memorial Hospital.

Case I.—Baby. W. H. Born December 21, 1924. Primipara. During last stage of labor, mother had a few drops of chloroform, baby born asphyxiated. After artificial respiration a few gasps, followed by apnea. One twentieth gr. of alpha lobelin injected subcutaneously. Within two minutes first deep respiration, within five minutes normal breathing.

Case II.—Baby. E. W. Born January 2nd. Primipara. Normally delivered child, breathed well. On evening of the second day breathing became stertorous and progressively worse. At 2 p. m. Cheyne Stoke's breathing, at 3 injected one twentieth gr. of alpha lobelin. In two and a half minutes normal breathing started, lasted for half hour, after which progressive decrease. Another injection was made with the same success. This was repeated three times. Two hours after the last injection child died. Diagnosis, intracranial bleeding.

Case III.—Baby. M. primipara. Forceps delivered child, asphyxiated, at birth spasmodic respiration, superficial, three in a minute. Skin irritation without success. Lobelin one twentieth gr., in two minutes breathing started, which in ten minutes was absolutely normal. Child living.

Case IV.—F. T. Baby. Multipara. Normal birth, child asphyxiated at birth, no respiration. Very little amniotic fluid. Skin irritation without success. Lobelin one twentieth gr. five minutes after birth, within one and a half minutes breathing. Child living.

Case V.—A. O. Nurse, twenty-two years. Slipped on icy stoop and hit her head on stairs, was unconscious and vomited. Diagnosis concussion of the brain. The second night after she was turned in bed, respiration went down, became shallow, four a minute. One sixth gr. alpha lobelin was given intramuscularly. After one and a half minutes first deep respiration, after five minutes respiration up to eighteen and normal.

Case VI.—Patient H. S., aged forty-eight. Came from operation room after an abdominal operation. At 9:45 a. m., half an hour before anesthesia, she had one quarter gr. of morphine sulphate and one one hundred and fiftieth gr. of atropine. At 10 o'clock she became cyanotic, the respiration went down, shallow. At 10:15 respiration was six a minute, and after alpha lobelin was injected intramuscularly, two minutes later the respiration went up to eight and was deep and powerful. At 10:30 another injection was given, the respiration went up to ten, a little later to twelve. Color returned right immediately after first injection, and patient came out of anesthesia at 11:30.

Case VII.—Miss R., aged twenty-six. Came back from operating room after appendectomy. At 7:25 p. m. she too had had morphine sulphate one quarter gr., atropine sulphate one one hundred and fiftieth gr., half an hour before anesthesia. Respiration was at 7:25—14, at 7:55—13, at 8:40—11, at 8:55—9, at 9:10—8, now alpha lobelin one sixth gr. was given and at 9:12, which respiration having been very shallow, it went up to 12, and was deep and more powerful. At 9:15 it was 14, went up slowly to 15 at 10 o'clock and 18 at 12 o'clock.

This last case was most closely observed and showed the action of alpha lobelin as respiratory stimulant very clearly.

From these results, the authors believe themselves justified in drawing the conclusion that lobelin is a powerful stimulant of respiration, which to date has proven to be of great value in all cases of functional central respiratory depression. The dangers of the drug seem to be very small, when doses are correct and when given subcutaneously. The intravenous medication can not be denied suitable cases.

The indication in detail seems to be:

1. Respiratory collapse from hemorrhage, anesthesia, shock (electrical?), or from the peculiar condition which closes most cases of severe decomposition (marasmus).

2. Poisoning of the centre through exogenous poisons, such as morphine, scopolamin, chloral hydrate, carbon monoxide, ether, chloroform, veronal, and through endogenous, such as carbon dioxide intoxication during pneumonia, stenosis, drowning, acidosis.

3. Asphyxia neonatorum.

We believe it wise to preserve the intravenous injections only for cases where the circulation is obviously incapable of absorbing the drug and transporting it to the centre. The dose for adults should be one sixth gr. to be renewed in twenty minutes, for children (also babies) one twentieth gr. (intravenous one twentieth gr. and one sixtieth gr. respectively).

We wish to call the attention to the fact that this drug can be used to the greatest advantage in suitable cases in connection with Henderson's carbon dioxide, oxygen method. Here there would be that synergism of drug action, which pharmacologists have learned to value so highly in recent years (e. g., morphine scopolamin, urethan morphine, adrenalin cocaine).

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Treatment of Hallux Valgus and Rigidus.—Robert Jones (*British Medical Journal,* October 11, 1924) states that both hallux valgus and hallux rigidus are closely associated with flattened arches. The etiological factor which is mainly responsible for the weakened arch and adduction of the big toe is the modern shoe.

The preventive treatment of hallux valgus consists in developing a heel and toe walk with parallel feet, and in wearing anatomically correct shoes. The mechanical treatment consists in deflecting the body weight from the inner to the outer side of the foot and in relieving the joint from pressure and friction.

Operations for the correction of deformity without functional debility should not be undertaken lightly, and never unless the patient is prepared to wear appropriate shoes. For mild cases without symptoms when the deformity can easily be rectified without force, it is sufficient to divide the capsule and reef it to the inner side, divide the extensor proprius hallucis, and remove a flap of skin so that when the edges are approximated it will hold the toe in slight abduction. Where there is neither pain nor disability, but where the deformity is more extreme and cannot be rectified by manipulation, it may be necessary to expose the joint, divide the tightened structures on the outer side, divide the extensor proprius hallucis, and perform a cuneiform osteotomy on the inner side. Where the symptoms are entirely referable to the bursa and do not involve the joint, the bursa should be excised together with the bony prominence below. Removal of the entire metatarsal head with part of the neck should be reserved for patients of middle life where osteoarthritis and periarthritic changes have occurred, the joint looking large and gouty. Removal of the head of the metatarsal should be reserved for those extreme cases associated with bunion where the head is rough and painful and the joint tender. It is more suited to the postathletic age. In young athletes, special endeavor should be made to retain as much of the metatarsal as possible in order to maintain the strength of the arch. The incision through the bone should be oblique, and a portion of the lower surface of the head left. The structures holding the bones together should be divided, the bursa and its bony bed should be removed. The toe should be maintained well extended until the wound has healed. Where the symptoms seem to be maintained by friction of the base of the first phalanx with the metatarsal, excision of the base of the first phalanx may be sufficient. Where symptoms resemble metatarsalgia and pain is referred to the space between the first and second metatarsal heads, an osteophyte is often found attached to the neck on its under surface. This requires removal.

In hallux rigidus the operation of choice is removal of the base of the first phalanx.

The disadvantages of all operations where deformity is excessive and its reduction is effective lies in the fact that the big toe remains too wide apart from the remaining toes, and no shoes can be bought to fit the foot. To obviate this deformity the author advises an osteotomy just distal to the base of the first metatarsal to allow approximation of the first metatarsal to the second.

Historical Medicine

The Birth of the Centaur Chiron*

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That Chiron the Centaur is a very ancient deity there can be no doubt. The epoch in which the action of Argonautics takes place is quite remote from that of the epopées of either Achilles or Ulysses. In the *Odyssey,* Homer refers to the ship Argo, while according to Apollonios the future hero of the Iliad was still a mere babe carried in the arms of Chiron's wife at the time the Argo set forth. From this remark it is evident that Chiron was known to the Greeks in the pre-Homeric period.

According to the theogony of Orpheus the god Cronos wrenched the sovereignty of the world from his father Ophion. Apollonios complacently relates the ridiculous and scandalous adventure that befell Cronos, which is not mentioned in the theogony of Hesiod. "Now while he was reigning over the Titans in Olympus . . . the Ouranid Cronos, deceiving Rhea, became united with Philyra. While they were upon their couch the goddess took them by surprise. Cronos leaped from the bed and fled, similar in shape to a horse with a thick mane. And the oceanid Philyra, full of shame, leaving these places, which were her usual abode, came into the long chain of the mountains of Pelasgas, where she gave birth to the monster Chiron, who resembled both a god and a horse, the fruit of this equivocal union."

This flight of the guilty husband, who, being caught in the act of adultery by his wife, is a comic episode which seems to have been invented by Apollonios, at least we know of no work prior to the Argonautics in which this legend is related. Virgil translates almost literally this passage from the Alexandrin poem when he depicts "Saturn, upon the arrival of his wife, spreading his mane over his horse's neck and, in his rapid flight, filling the high Pelion with a shrill neigh."

> . . . Iubam cervice effudit equina
> Coniugis adventu pernix Saturnus et altum
> Pelion hinnitu fugiens implevit acuto.
> (Géorg., III, v. 93.)

But it is not in the Æneid that this scandalous episode of the Alexandrin epopée is to be found; Virgil alludes to it in the Georgics when the nymph Clymene gives a long chronicle of the scandalous happenings in Olympus.

The ancient writers do not agree on the origin of Chiron. Hesiod, in his Theogony, says that Chiron was the son of Philyra and designates him by the epithet of Philyrid, as one of the children born of an unknown father who bear the name of their mother. In the Thessalics, Suidas says that Chiron was, as were all the Centaurs, the son of Ixion and brother of Peirithoos. But this origin attributed to Chiron does not seem to be generally adopted. The Scholiast of the Argonautics says that: "the author of the Gigantomachy says that Cronos, metamorphosed into a horse, became united with Philyra, and because of this Chiron, who was born of this union, was a Hippocentaur." Of this poem nothing is known, neither the date when it was composed nor the name of its author. It has been identified with the Cyclical poem *The Titanomachy,* attributed to Eumelos. However this may be, everything we know of the Gigantomachy is most indefinite, so that it is probably better to accept Keil's opinion, who places the unknown author among the *incerti poetae.* The most ancient author who, as far as we are able to ascertain, attributed the birth of Chiron to the union of Cronos and Philyra consequently is Pherecydes. The Scholiastic of the Argonautics says: "Pherecydes says that Cronos, changed into a horse, became united with Philyra, daughter of Oceanos, and for this reason Chiron possessed a double attribute, that of a man and a horse."

This is the tradition most commonly accepted since Pherecydes, but Apollonios is careful in accepting this version, such as it is. The learned scepticism of the Museon of Alexandria resorted to subtility in the explanation of all things. Apollonios, who had read Aristophanes' comedies, in which the gods are ridiculed, and who also was conversant with the medical doctrines of his illustrious fellowcitizens, Herophilos and Erasistratos, knew full well that Castor, Pollux and Pherseus had been conceived by Zeus when the god appeared as a swan or a shower of gold, yet nevertheless they were heroes quite like the most beautiful of the sons of men. He therefore invents occurrences which the author of the Gigantomachy and Pherecydis had certainly not thought of; the double nature of the Centaur is the result of two successive shapes that Cronos assumed at the time when Chiron was conceived. Apollonios, who only partially believed in the gods whose history he wrote as a sage, amused himself by placing Cronos in the position of a husband in a farce taken by surprise by a jealous wife. Hence, Chiron bears the results of his father's fright.

We know that Chiron, the mildest and most just of all the Centaurs, was the teacher of medicine to all the heroes of Thessaly, Jason among them, as is stated by the Scholiast (*Scol. Argon. I, V,* 511-512) who at the same time points out that his name was given him on account of his success in the study of medicine.

Philyra, the mother of Chiron, and Chariclo, his wife, were both Nymphs. Now, as the Nymphs in general were the goddesses of running waters, including the thermomineral waters which cure disease, they were connected with the healing art, and, as they were also prophetesses, they could foretell and reveal the final outcome of all ills in man.

*Read at the Fifth International Congress of the History of Medicine, Geneva, July 25, 1925.

The Four Faculties on Cæsarean Section

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To my mind's eye (1) a pageant on various aspects of Cæsarean section is presented by a typical university's traditional four faculties, to wit: theology, law, medicine and arts and letters. Taking these in some detail:

Theology shows how its primeval representative was doubtless the inventor of this operation as a ritual ceremonial (4); how conjectures of this invention (based on customs most widespread in time and place) were confirmed by the discovery, just before mailing this paper (4), of the survival of such ritual today among primitive peoples; how, as told in Genesis and depicted in every collection illustrating this operation, Eve was delivered by divine instrumentation, from the side of Adam; how the equivalents of this section are frequently mentioned in the religious writings of the Hebrews and other Orientals; and how the section so thoroughly permeated the mythology of the Greeks (and thence of the Romans) that references need be made merely to certain instances related of their chief god, Zeus, such as that Athene was delivered from his brain by cleaving his skull and that another child Zeus transplanted from the body of its dead mother into his opened thigh where it incubated to term and was then cut out and lived through a successful career.

This portion of the pageant does not trace the section at Rome (Republic and Empire) and during the rise of the Church, but it does show how, with the discouragement of surgery, this section became forgotten with two exceptions: first, that of opening dead, pregnant women, and how, in such cases, operation was enforced under penalties and performance is still insisted upon today by the Roman Church (3). Second, ritual representation (still surviving in a solitary instance, but formerly widespread and of amazing antiquity) of the delivery of the Divine Child by a quasi Cæsarean operation on the Blessed Virgin (5); further showing how the Roman Catholic Church is today confronted by a new problem which, in varied forms, will meet us repeatedly hereinafter, namely:

In view of the improved technic of the section and of the increased chances of giving the child a certain, regular, baptism (instead of the intrauterine baptism, permissible only because of its apparent necessity), should a dying woman, evidently pregnant with living fetus, be opened immediately without awaiting her death?

Considering that the life of the fetus is most likely to ebb with that of its mother and that two sister faculties are beginning to bring pressure toward an affirmative answer, the ultimate decision by the faculty of theology can scarcely be doubted.

Law shows how it was long believed to be the originator of Cæsarean section through the *Lex Regia* of the Roman Twelve Tables; how this royal law has two faces, first, looking toward us where royal is the equivalent of imperial (or Cæsarean, still surviving in the title prefixed to section); second, looking infinitely backward and away from us, where royal means antique-beyond-the-memory-of-man, thus leaving the *Lex Regia* as a comparatively late codification of a prehistoric observance and showing thereby how law, in this respect, falls into a place as a mere ancillary of religion, remaining thus until the most recent days and how it has suddenly awakened to its own independent interest in the problem aforesaid, but in this form, to wit:

Should the law insist upon the immediate performance of the operation upon a dying, pregnant woman, in order that the child might be born the living issue of parents still in wedlock, or should the law continue to sanction the present custom of awaiting the death of the mother before operating, causing thereby to be diminished, a, the chances of the child's surviving, and b, its property and other rights?

These phases of the problem and also of the father's rights therein, I purpose to discuss more fully in a legal article shortly forthcoming.

Medicine shows how it has passed through long cycles of use and disuse of the section; how surgery, starting simply as the manual aid to religion, attained, by the long practice thereby acquired, a surprising dexterity and success in the operation (2); how this facility was retained by various ancient peoples so that the operation appears in their literature as a commonplace; how, to the classical ancients its success was so familiar that even a veterinary example has chanced to be preserved to us in that wonderful treasury, the *Greek Anthology* (3); how, with the waning of Roman civilization, the section, with other surgery, fell under the ban of the Church as already shown in the theological portion of the pageant; how the Church, through its civil arm, enforced the performance of the operation upon women dead, pregnant, under pain of death of the physician omitting such performance; how nonprofessionals, about 1500 A.D., revived the operation on the living which was, and continued to be, hazardous till a few score years ago; how the technic has improved so rapidly that now there is outcry in the medical journals that the operation is performed needlessly; how, notwithstanding this last, the problem aforesaid is here also becoming a burning one, namely:

Should there not be an abandonment of the routine of awaiting, before making the section, the actual moment of diagnosed death by which waiting the maternal and fetal tides of life ebb away together? This waiting so certainly decreases the chances of the child's surviving as to become dangerously near intentional manslaughter.

Arts and letters show multitudinous manifestations of the section which space fails here merely to mention, but we can particularize what is exhibited by the combined departments of history and folklore, the disputed delivery of Edward, afterward the Sixth, of England, and how (although historically it is still doubtful whether the section was actually performed on his mother) contemporary ballads are sure that his

royal father was so possessed by the prospect of having a male heir that he had no scruples in submitting his beloved queen to what was then popularly regarded as certain death.

The department of letters in this portion of the pageant shows many and lively examples of which but one can be cited (6), it being by two masters of realism and in a form too vivid for publication when written. Interesting in itself, it is now doubly so as describing the technic of sixty years ago.

When a pageant, such as sketched above, presents itself to the mind of a handicapped layman (1), it is evident that another, better trained and equipped, could make a more convincing presentation. Enough, however, has been indicated to warrant the surmise that Cæsarean section has had a greater share in the history of the human race than has been generally suspected.

NOTES AND REFERENCES

1. Thus only could I see, since I was blind, in a hospital, without books, memoranda or clerk, but able to write in the dark.

Proper documentation, otherwise imperative, is made needless, however, by the abundant citations in my companion piece (4) which has enough to carry both articles. Fortunately, too, I now have the skilled aid of Wm. D. Austin, Esq., toward making more intelligible an article perforce so compressed as this.

2. A recent instance of this dexterity among primitive folk in Central Africa is depicted and described by a competent surgeon and eyewitness.

3. Ela, A: Across a Gap of 2,000 Years, *J. Am. Vet. Med. Assoc.*, 1916, N. S. I. 650.

4. Idem: Fear of the Fetus: An Ancient Cause for the Cæsarean Section, *Am. J. Obstet. and Gyn.*, April, 1922, III, 445-448.

5. Idem: Some Forgotten Nativities, *Am. Jour. Obstet. and Gyn.*, October, 1923, VI, 501-504.

6. De Goncourt (E. et J.): *Journal des Goncourt* (Paris, 1912, ed.), II, 222.

This may be translated as follows: "October 23, 1864, I omit this, as being too realistic, from my manuscript of Germinie Lacerteux, at the time of her confinement at Bourbe.

"By the fireplace, two young student midwives were chatting in a low voice. Germinie listened and, with the sharpened senses of the sick, heard everything. One of the students was saying to the other: 'That unfortunate dwarf! Do you know who got her into trouble? Why, the Hercules of the show where she was on exhibition.'

"Just think! We were all there in the amphitheatre. There was a terrible crowd—all the students. They had shut out the light from the windows; it was lighted by a reflector so as to see better. Mattresses had been placed side by side on the table of the amphitheatre. They made a large place on which the reflector shone. Near by, a table, and all the surgical instruments, and then on one side (p. 227) great basins with sponges, large as your head.

Mr. Dubois came in, followed by all his assistants. He was the whole thing, was Mr. Dubois. Then, there was a bundle brought in like a bundle of linen and placed on the mattress; it was the dwarf. Oh! the horrid thing!

Imagine the ugly head of a dark man upon an enormous body, all white; it looked like one of those big spiders, you know, in the fall!

Mr. Dubois encouraged her a little. She didn't seem to understand and then he took from his pocket two or three pieces of sugar which he put beside her on the mattress.

Then they threw a towel over her head so that she should not see while house surgeons held her arms and spoke to her. Mr. Dubois took a scalpel; he made a stroke, just like that, on her stomach, from the navel downward; the stretched skin parted; you saw the blue aponeurosis, as in skinned rabbits.

He gave a second stroke which cut the flesh; the belly became all red; a third stroke; at that moment, my dear, Mr. Dubois's hands disappeared; he groped in there; he took out the baby; then, really, that was the most horrible of all. I shut my eyes. They put the big sponges on her. They all went in, all, you didn't see them any more! And then, when they did take them out, it was like when they clean out a fish—a hole, my dear.

(P. 227.) Finally, they sewed her up. They fastened all that with thread and pins. Never mind, I assure you, that if I should live a hundred years, I should never forget a Cæsarean operation."

"And how is she tonight, the poor thing?" asked the other.

"Not bad, but you will see, she will have no better luck than the others. In two or three days the lockjaw will get her. They will force open her teeth, to begin with, with the blade of a knife, and then they will have to break them, to make her drink."

The original of the following was found and copied for me by Prof. Gilbert Searles, of the University of Minnesota.

The Leprous King of the Palace of Angkor.—M. George Groslier, director of the museum of Cambodge, well known for his works on art and on the Khmers, has recently given the Laurens library a volume on Angkor, ancient and illustrious capital of the kingdom of Cambodge. Numerous illustrations show friezes and bas reliefs where are made eternal in stone all the gods of the Brahmin Olympus. Buddha the mysterious, is there, and smiling; the sacred dancers are shown in their hieratique poses. Terraces, partitions, basins, walls, where are sculptured a flora and fauna of prodigious variety, spread before a rich documentation accurate but never wearying.

It was in Angkor Thom, of which Yacovarman laid the first stone about 900 A.D. that the celebrated terrace of elephants was found, the terrace called that of "the leprous king." This name was given to it because of a figure found on it, and there still. "A fantastic name," writes M. George Groslier, "especially since there is nothing to prove that the statue is that of a king, that the king had leprosy, or that that was its original location." In reality the mutilations which are shown of the feet and hands of the statue of Angkor should not be attributed to an attempt to represent leprosy, but merely to the ravages of age."

The Medical Rôle of Buffon.—Buffon was the founder and one of the greatest of those connected with modern biology. His works rapidly circulated among the public, read with significant results and commented upon with enthusiasm, have exercised an important influence not only upon natural history, but upon science in general. They gave a fresh and systematic orientation which natural science still follows. Louis Roule shows this in his recent work dedicated to the great naturalist (*Buffon et la Description de Nature*): "Buffon wished, first of all, to establish a method of investigation, and proposed it to others. The method which he advised was experimental term which he was the first to use in its real and complete sense. It consisted in observing the facts, in inducing their presence, not overlooking them in rationalization, evaluating them accurately, and judging them by comparisons. Facts observed, nothing else. Thus he was to avoid theories, general systems which he called physical romance and brilliant chimeras. This method alone was sure and alone was accurate. Its inconvenience was its slowness, which demanded great patience. But, added Buffon, "patience is genius."—*Æsculape.*

Contributors to the Science of Medicine

Louis Pasteur

The name of Louis Pasteur stands almost by itself in the roll of contributors to medical science. His researches and their outcome placed the study and treatment of medicine on a new footing and the same remark may be made regarding the influence of his discoveries upon surgery. In short, Pasteur revolutionized both medicine and surgery.

It is a somewhat curious irony of circumstances that for the great progress in medicine and surgery during recent years we are indebted to a man who was neither a physician nor a surgeon, but a chemist. To Louis Pasteur, the great but modest and unassuming Frenchman, suffering humanity owes more than to any man of any age. The fame of an Alexander, a Cæsar or a Napoleon pales into insignificance when contrasted with the true greatness of Pasteur. Theirs was a destructive while his was a life saving form of genius. Among the ten greatest men who ever lived Pasteur judged by the results of his work would be surely awarded a leading place. He made surgery safe and the most epoch making changes in medicine and surgery have been due to the sciences of bacteriology and immunology originated and extended by Pasteur.

In the cure or the prevention of disease, the knowledge of the cause assists greatly in devising means to combat infective invasion of the body by organisms of the vegetable kingdom, bacteria, or of the animal kingdom, protozoa. Pasteur demonstrated the almost universal distribution of bacteria, the efficacy of thorough sterilization in preventing their life and harmful action and the fallacy of supposed spontaneous generation of microorganisms. The practical result is that if infection from without is prevented, operation can be carried out safely. The risk of the necessary incision initiating blood poisoning is avoided and thus numberless lives saved and operations divested of most of their terrors. Also the scope of surgery has been widened almost immeasurably.

Moreover, the science of bacteriology, brought into being largely by Pasteur, blazed the trail to even wider changes than the surgical revolution. It altered the conception of medicine as a whole. The causation and to some extent the prevention of disease having been made clearer, the problems of immunity were elucidated and the knowledge thus gained can be put into practice. For example, the cure of diphtheria, the prevention of enteric fever and the prevention of tetanus are logical sequences of Pasteur's treatment for the prevention of anthrax in sheep and hydrophobia.

Louis Pasteur was born at Dôle, in the Jura district of France, on December 17, 1822. His father had been a soldier and received the Cross of the Legion of Honor. His mother's maiden name was Roqui. Both parents were of good descent but poor. Louis was the only son and had two younger sisters. When he was quite a small boy the family moved to Arbois, where he went to the primary school and to classes at Arbois College. He evinced no especial talent except that he drew portraits well. However, M. Romanet, the principal of the college, had so good opinion of the youth Pasteur that he urged him to work for a degree and at the age of sixteen he was sent to a boarding school in Paris. He became so homesick that his father brought him back to Arbois. In 1839 he gained many prizes at Arbois College which he had rejoined and in 1840 went to Bescançon to the Royal College of Franche Comté. He next joined the Ecole Normale, the great training college of Paris, after he had passed without distinction for a degree in science at Arbois College, and curious to relate was only moderate in chemistry. However, in 1848 he was fourth on the list for the Ecole Normale. His entrance to the Ecole Normale determined the whole course of his life and to the end of it the study of chemistry was his goddess and research work his sole aim.

But before telling some of the history of his discoveries, it is fitting to say something of the manner of man Pasteur was. He was a good son and a good brother and his numerous letters to his family, many of which are published in M. Vallery Radot's *Vie de Pasteur,* afford convincing testimony to this fact and to his love of home and of the place in which he was born. Pasteur was essentially a domestic man and a true patriot. He married in 1849 Marie Laurent, a daughter of the rector of the Academy at Strasbourg, where he had just been made professor of chemistry.

Pasteur made some important investigations in chemistry. His first discovery was while he was at the Ecole Normale in Paris, that of the molecular dyssymmetry of tartaric acid. When investigating tartaric acid, his quest compelled him to see for himself the manufacture of wines and he was carried from the study of crystals to ferments and thus came as it were somewhat by chance to his immortal discoveries. But in order that he might be enabled to pursue his researches in this direction under the most favorable auspices, it was essential that he must be set in a great industrial district. In 1854 it came about that this requirement was satisfied as he was then appointed professor and dean of the newly formed Faculty of Sciences in the University of Lille. In 1857 he was recalled to Paris and was appointed to take charge of the science teaching of the Ecole Normale. He studied fermentation for twenty years or there abouts.

In 1864 Pasteur gave his famous lecture at the Sorbonne when he said in part: "There is no condition known today in which you can affirm that microscopic beings come into the world without germs, without parents like themselves. They who allege it have been the sport of illusions, of ill made experiments, vitiated by errors which they have not been able to perceive, and have not known how to avoid." Exhibiting to his audience his flasks which had been subjected to prolonged boiling after having been hermetically sealed, he implored them to give

him a sign of life, and they would not "for I have kept from them," he said, "and am still keeping from them, the one thing which is above the power of man to make; I have kept from them life.". *La vie c'est le germe and le germe c'est la vie.* In short, fermentation, decomposition, putrefaction, are acts of the living dust in the air, the bacteria come from outside and not from inside and that a liquid really sterile and securely protected against the invasion of the living outside matter, will remain sterile forever.

He certainly enriched France by the scientific improvements he introduced into her wine and vinegar factories but his one ambition, as he told Napoleon III when he was presented to him in 1863, was to find out the causes of putrid and contagious diseases. In 1865 Lister first put this knowledge to practical application. Of course this was Pasteur's great discovery so far as surgery is concerned. In 1865 cholera raged in parts of France and in the autumn of 1865 traveled from Marseilles to Paris, where for a time it was quite prevalent. Pasteur, Claude Bernard and Deville tested the air of a cholera ward in the Lariboisière Hospital. Pasteur concerned himself almost as much with plant chemistry and disease as with human disease, in fact it was from his investigations into the diseases of wines and the principles ruling the process of fermentation that he evolved his germ theory.

In 1865 he made a study of the silkworm disease. Up to that time he knew nothing of silkworms, but as for several years the silk industry in all silk growing countries, including the south of France, where the loss and misery were especially evident, had been in a deplorable condition, he set his great powers of mind and his deep knowledge of chemistry to the elucidation of the problem. He discovered the cause and the way to prevent its recurrence and in consequence prosperity returned to the silk trade and the workers therein were saved from poverty and distress.

From 1865 in addition to hard work he suffered from many personal and domestic troubles and much grief. His father died in June, 1865; his child Camille in September of the same year; his child Cécile in May, 1866; in October, 1868, he was seized with a cerebral hemorrhage and nearly died and as a climax in 1870 came the Franco-German War. However, nothing daunted during these trying years, which brought in their train bitter sorrow and failure of health and the wrecking of his beloved country, Pasteur went on with his investigations into the cause of silkworm disease, and did some of the best work of his life. His book *Etudes sur les Maladies des Vers à Soie* is a masterpiece, from both scientific and literary viewpoints. In it is explained clearly and logically the cause of the disease named *pébrine* and not only the cause but effective means for preventing it. As a matter of fact he had found that these worms were subject to another disease termed *flacherie* which he also succeeded in conquering. This was an international triumph and is depicted graphically in his remarkable book. Soon after completing this work and while again engaged in the study of problems of fermentation he suffered from cerebral hemorrhage. In the words of Stephen Paget who published a short life of Pasteur in 1914, "That is the story of Pasteur's life up to 1870. He had helped to discover a new department of chemistry; he had revolutionized the manufacture of wines and vinegars; he had proved the truth of the germ theory; he had founded, with Lister, the methods of modern surgery; and he had been the very saving of the silk trade."

As said before Pasteur in addition to revolutionizing surgery, practically founded the whole domain of bacteriology. But he had to fight hard with old established views and prejudice, in the same way that Lister had to fight in Great Britain. Broken in health, almost heartbroken by the war, Pasteur bravely entered the battle to prove that his views were based on sound premises. In 1878 he took his seat as an associate of the Académie de Médecine and then began the long drawn out battle of the new pathology. It is well known how it ended, and that Pasteur and Lister won all along the line. Pasteur also grappled with the problems of anthrax, the germ of which he discovered and finally found a protective treatment for anthrax, of chickenpox, the investigations into which, in the opinion of Paget, led him to the greatest of all his discoveries that an attenuated culture is able to confer immunity against a culture at full strength. Jenner discovered the principle of immunity but Pasteur scientifically investigated, indeed rediscovered it. Of course, it need hardly be pointed out that his protective treatment of anthrax was founded on the same principle. In this work he had the collaboration of Dr. Roux. Pasteur was the father of scientific immunology. From anthrax he proceeded to the study of erysipelas, *rouget, mal rouge,* and discovered a protective vaccine. In 1880 Pasteur took in hand the study of rabies, and on July 6, 1885, first applied to human beings the knowledge of immunology he had learned from the study of animals and practised the method on them successfully. All the world know the success that followed these researches.

In November, 1888, the Pasteur Institute in Paris was opened, given not by France only but by many countries to Pasteur. There are now more than sixty Pasteur Institutes while rabies has come to be a comparatively rare disease. Sickness, work, grief and worry had enfeebled and aged the body of the great Frenchman, although it had scarcely dimmed his mental powers nor weakened his indomitable spirit. In 1895 he said goodbye to the Institute and died on September 28th of the same year.

Pasteur in many ways was the most remarkable scientific man who ever lived regarded from all aspects. His love of home, his ardent enduring patriotism, his humility, his religious faith, when considered together with his wonderful discoveries, mark him as one apart. He experienced life in almost all its phases, poverty, ill health, bereavement, prejudice and persistent opposition. He lived to see his views accepted in every part of the world, his scientific discoveries by physicians and surgeons everywhere recognized as revolutionizing medicine and surgery and put into practice by them, his methods applied to manufacture and agriculture to the salvation of his own country and to the betterment of all countries. Pasteur was an internationalist in the truest sense of the word. He has been fittingly described "as the most perfect man who ever entered the kingdom of science."

Editorial Articles

FOLK MEDICINE

In the old days, two hundred years ago or more, therapeutic treatment was very different from that in vogue at the present time. To speak the truth, both surgery and medicine were at a very low ebb and in some respects it was the iron age almost in treatment of every description. While this was the case in Europe generally and perhaps in Great Britain in particular, similar conditions prevailed in this country and in Canada and in rural districts to an exaggerated extent. On the other hand, on this side of the Atlantic, at any rate in North America in the pioneer period where, of course, the land was sparsely populated, and the inhabitants were of virile hardy stock and whose manner of life, with the eating of plain wholesome food, early to bed and early to rise and working hard, mostly in the open, conduced to vigorous health. The only drawback to this ideal state of affairs from the viewpoint of health was that it was a time of heavy drinking and much meat eating from which it is said that even the Puritan fathers were by no means exempt. However, hard work and exercise in the fresh air overcame many of the ills produced by imbibing and eating not wisely but too well, and when livers became clogged and digestions impaired somewhat drastic aperients were resorted to which no doubt served the purpose effectively.

It must also be taken into account that for some time these country dwellers, owing to their scanty numbers, the absence of crowded cities and above all to the difficulties of travel, were practically exempt from the invasion of contagious diseases. Also it may be noted that there were very few country doctors. In the ordinary course of events the early settlers got on without them or called them in only when an illness was acute and serious.

In the *Canada Lancet* and *Practitioner,* June, 1925, Dr. John N. E. Brown, of Toronto, writes instructively of the old time folk remedies upon which the pioneers largely relied when a member of the community was sick. As a matter of fact, they had little choice in the matter. Elaborate synthetic preparations which we have with us now were unknown and the remedies employed were for the most part herbal preparations, interspersed with charms, as unconsciously no doubt our forefathers were aware of the beneficial effects of psychological influence. The knowledge of disease and treatment possessed by these men and women who blazed the trail was elementary, or, as Dr. Brown puts it, primitive, and yet some of these therapeutic agents seemed to have been strangely efficacious. Perhaps it was because few of the herbal decoctions exerted strong action but merely assisted Nature.

They learned something of drugs from the Indians, who had a peculiarly intimate knowledge of treatment by remedies obtained from the vegetable kingdom. Also such knowledge was continually being added to. One family conveyed to another special information it had gathered as to results of such and such a plant on diseases, and this knowledge was handed down. Moreover, from Europe they brought with them the folk medicine of the countries from which they came. And thus a "body of empirical medical lore became a common possession of the community."

Dr. Brown has collected from various sources a lengthy list of some of the plants, indigenous and exotic, and of other remedial agents which have been used, and are still being used, both in country and town, for the alleviation of sickness and of "complaints" of various sorts. It is not feasible in an article of this kind to refer to but a few of these. Dandelion has long been a favorite domestic remedy used freely for torpid liver, costiveness and dropsy; Balm of Gilead, belonging to the willow family, a very soothing and healing ointment for "wounds, bruises and putrefying sores." Of the mint family the popular catnip is first and foremost. The dried leaves and flowering tops infused in boiling water, constituted a sovereign remedy for stomach ache, colic, cramps and flatulence of childhood. Senna is too well known to require description. Suffice it to say that Dr. Brown knows cases in which constipation was relieved much better by this old fashioned remedy than by epsom salts. Linseed of the flax family was an invaluable old home remedy. Infused in boiling water, given in bronchitis and cystitis with an equal quality of lime water, known as carron oil, it has long been a favorite application for the relief of burns.

Pleurisy root, known as butterfly weed, the botanical name being Asclepias tuberosa, after Æsculapius, of the milkweed family, is another. One ounce of the powdered root was added to a quart of water and made into an infusion or decoction and given in cupful doses every two or three hours. In varying doses it is said to act as an expectorant, diaphoretic, sedative, astringent, cathartic and emetic. It was used in catarrh, pneumonia, phthisis, diarrhea, dysentery, rheumatism, gastralgia and to promote eruption in exanthematous fevers. In addition to herbal remedies some mineral home remedies are referred to, and animal remedies are mentioned. Skunk oil was recommended by certain old medical wiseacres for its

curative properties when applied to rheumatic joints, and was quite extensively employed in the olden times.

Among the charms commented on is the following: Some of the old Scotch folk in Zorra, Ontario, cut a sponge into small pieces, grind into powder, and administer to girls with enlarged thyroids. As Dr. Brown shrewdly remarks, if the sponge contained iodine which is possible this would explain the good results. There is little doubt that some of these remedies which by the way have stood the test of time are effective, and it is not only tradition founded upon ignorance that explains why they are still in use. The virtue of charms, of course, depends on the effect of the mind on the body which is probably greater by far than is generally supposed.

THE FILTRABLE VIRUSES

The great improvements made in the microscope, coupled with corresponding advances in the methods of laboratory research generally, appear to have ushered in a period of remarkable activity in investigations for the object of finding out the cause of disease. Forty or fifty of the diseases of animals are believed to be due to minute organisms which used to be termed ultramicroscopic. In man such diseases as measles, chickenpox, smallpox, acute poliomyelitis and perhaps epidemic encephalitis are thought to be due to a similar cause. It seems, too, from recent investigations that a filtrable virus is a prominent factor in the causation of cancer. In any event, extremely minute forms of bacteria are suspected, with good reason, of causing or of being largely concerned in the causation of a large number of both human and animal diseases.

The improvements in the microscope and of the latest methods of research open up a wide field to the laboratory worker which up to this time has been closed. The study of comparative pathology is greatly encouraged by these new means of investigation. As said before, there appears to be no doubt that many diseases of animals are due, to a greater or less extent, to filtrable viruses and it is therefore not an extravagant hope that by patiently and persistently pursuing the study of comparative pathology and medicine, much may be learned, not only of the causes of disease but of what is more important by far, its prevention or successful treatment.

The study of the diseases of animals is being conducted with a very fair measure of success by the Zoological Society of Philadelphia. In the report of this society for 1925 some valuable information is given. For instance, during the year under review a generalized sarcoma, apparently arising from stroma cells, were observed in a Richardson's kangaroo rat. A sarcoma of as yet unsettled origin and type was observed on the nose and thyroid of a ring tailed bassaris and a fibromyoma was found in the uterine wall of a lion. In other zoological public collections as the Zoological Gardens in London comparative pathology and medicine are being studied on a wider scale than formerly and, of course, on scientific principles. It is now recognized that by the collaboration of the medical and veterinary professions knowledge of the causation and treatment of disease can be appreciably extended to the benefit of suffering humanity and perhaps especially so in the direction of the filtrable viruses.

CLIMATE, HEALTH AND CHARACTER

The influence of climate on health and character is one that has been widely discussed, and while opinions have been expressed no very definite conclusions have been reached. It is, however, the general opinion that a tropical climate is not suitable to the white man, that it tends to injure his health, to sap his energy and to deteriorate his mental faculties. But views are not so decided on these points as formerly. It is pointed out that when the insect pests of a tropical region have been destroyed, or at least so greatly decreased that they are not an ever present menace, the white man can live in fairly good health. Panama is cited as a stirring example as well as parts of tropical Australia.

The mosquito is the bane of the tropics as it is of any country in which it abounds. According to Ross and Jones the fall of Greece and that of Rome may be attributed chiefly to malaria. Perhaps it would be quite within the limits of discretion to say that when all is taken into consideration, diet, manner of living and so on, that the white man after a time deteriorates in physical and mental fibre in the tropics, that the longer he lives in the Torrid Zone the more pronounced this deterioration is and that even degeneration may take place in white families which have lived for two or three generations under tropical conditions.

An enervating atmosphere is not good for health physically or mentally. The winters of the northern part of this country, for this reason, are not so exhilarating perhaps as other seasons of the year, the fall for instance. It is highly probable that the loss of energy and injury to health that occur in the winter may be avoided, to a large extent, or at least greatly diminished. Much of this ill health arises from the fact that after the wonderfully stimulating weather in the fall, when we have been living under conditions approaching almost the ideal of mean temperature, humidity, and variability, we suddenly begin to heat our houses, offices, factories, libraries

and public buildings of every description. There is created an indoor temperature of great uniformity and of unduly high mean temperature and above all generally of very considerable dryness. American visitors to Great Britain complain bitterly of the chilly interiors of most of the houses and public buildings there, and often rightly so, but probably this state of affairs is more conducive to good health than the overheated interiors of similar houses and buildings here. If the interiors of the majority of houses, public buildings and factories were kept at a lower temperature of a varying degree, and the humidity increased, physical and mental efficiency would be at a higher standard. The inmates would not only be more comfortable, but with daily variations of temperature, they would not feel the need for the high temperatures which are now the vogue because the extreme dryness compels the body to give up much more heat than would be demanded by an air more humid, that is, more in keeping with the true requirements of the body.

Moreover, and this is a point which has been emphasized frequently, this uniform dryness does a great deal of harm by parching the mucus, rendering those who live under the usual American conditions indoors in the winter season peculiarly susceptible to catarrh, which in its turn may develop into various serious respiratory diseases.

In the tropics, on the other hand, houses might be cooled artificially. But as Kipling remarks "that's another story." The white man is not adapted for permanent residence in a tropical climate, neither, it seems, is he by reason of his general physical and mental "make up" intended for many of the artificial conditions under which he now lives, including the heated atmosphere of most interiors in the winter time. Too much luxury, perhaps (overheated air may be regarded as a luxury) tends to deteriorate physically and mentally.

THE PHYSIQUE OF THE BRITISH PEOPLE

For some time past the prophets of evil have been insistent and constant in their warnings that the physique of the inhabitants of Great Britain is deteriorating. Since the war these gloomy lucubrations have been more frequent. Only a few weeks ago Sir Arbuthnot Lane raised quite a storm in lay and medical circles by stating in an article published in the *Franco-British Review* of December last that the British girls and women were not equal in stature and weight to those of the early Victorian period. Of course, this assertion was hotly disputed, as if there is one thing upon which the female of the present generation in Great Britain prides herself it is in her superiority over the early Victorian girl and woman in physique and muscular strength. Perhaps, however, Sir Arbuthnot had not in his mind that class of woman who can afford to indulge in out of door games and sports, but to the much larger class who have to work for a living either in a factory or at home. If so, he was on sounder ground, although it is questionable whether the British female working population at the present time are not, on the whole, physically more fit than that of sixty years ago.

More recently, however, another bombshell has been dropped into the camp of the complacent beings who hold that all is for the best in this, the best possible world, and on this occasion by Sir Leonard Dunning, an inspector of constabulary in Great Britain. He states in his report upon the police forces of England and Wales that the deterioration of the nation's physique and the after effects of wartime privations which are showing in those now reaching manhood account for the large number of applicants for the forces who are rejected on medical examination. On the other hand, in London the evidence is convincing that the physique of London school children has improved greatly. The Central Care Committee of the London County Council, which has been specially investigating the postwar physique of London school children, has found that London boys born during the war are nearly half an inch taller and nearly four pounds heavier than their counterparts twenty years ago. At any rate, London elementary school children are today better in physique, health, and cleanliness than in the last prewar year. School milk meals and other ameliorative conditions have greatly reduced the number of children suffering from undernourishment; personal hygiene is rapidly improving; and in school dentistry astonishing progress is being made. Also it may be noted, that it is scarcely credible that the experiences of medical education officers in other parts of the country differ very widely from those in London. In many cases indeed it is confirmed. For example, in Bradford elementary school girls today are, on an average, nearly two inches taller than they were a generation ago. If there is any deterioration at all, mental, moral or physical, it is due not to wartime privations, but in the opinion of medical education authorities to the effect of inferior conditions of living.

Weighing the question judicially, it may be said that taking everything into consideration the physique of the British population has not deteriorated seriously, at least, has not done so on account of the war. It must be borne in mind that good physique is largely a matter of food and environment. The working population who live in cities and large industrial centres live under conditions unfavorable

to health. And as the population of Great Britain has lived under such conditions of a more intensified character and for a longer time than the manual workers of any country, there is no cause for wonder if the health of the British workers has suffered the most. There is a tendency in all lands, even when the country offers the best prospects, for people to mass together. The herd instinct is still strong, to which must be added the allurements of the artificial civilization of towns which appeals to the senses and emotions of a more or less sophisticated generation. The consequence has been and is, that overcrowded districts are prevalent in every country, witness the tenement district of New York, where conditions are not only inimical to health, but are opposed to normal mental or moral development.

INTERSTITIAL KERATITIS AND SYPHILIS

It appears to be more generally recognized by the medical profession that syphilis is a contributing cause of numerous diseases, perhaps of most diseases. To inherit the syphilitic taint seems to mean a susceptibility to certain affections or rather perhaps that certain conditions, such as traumas, for instance, are likely to present syphilitic manifestations. Dr. Eugene Hertoghe, of Antwerp, and Dr. W. Seaman Bainbridge, of New York, in a paper published in the *Franco-British Medical Review,* January, 1925, suggested that luetism, an attenuated form of syphilis, possibly modified through having passed through several generations, is the basic cause of many malignant and nonmalignant duodenal and gastric ulcers.

At the last meeting of the British Medical Association a subject dealt with and discussed was that of interstitial keratitis. Mr. W. T. Holmes Spicer opened the discussion. It was pointed out that in a fairly large proportion of cases the commencement of this form of eye trouble followed an injury. Statistics as to the proportion of cases subsequent to injury conflict somewhat varying from estimates of three per cent. to twenty per cent. Mr. Harrison Butler went so far as to express the opinion in a paper read a few weeks ago before the Society of the British Medical Officers that an attack of interstitial keratitis might be precipitated by an accident to a cornea predisposed to it by syphilis or tubercle; that a slight trauma, like the instillation of drops or a general anesthesia, was enough as a cause; that the attack might follow in the other eye; that the injury might directly precipitate interstitial keratitis in the second eye without participation of the injured eye. In fact, Butler is inclined to think that trauma is always present before the attack.

According to Spicer the following conclusion seems inevitable. The interstitial keratitis depends on the presence in the eye of the organism of syphilis; the spirocheta pallida, and on its readiness for evolution; if that organism be present interstitial keratitis is practically certain to occur at some time. If the organism is present but the required state of evolution not reached, there will be no attack. If the required state is not reached in the two eyes simultaneously, there will be an interval between the two eyes in the occurrence of the condition. If the state of evolution has been reached there will be an attack in the absence of any stimulus and in spite of anything that can be done.

Interstitial keratitis is generally a manifestation of congenital syphilis or of tuberculosis. Dr. G. de Schweinitz, of Philadelphia, took part in the discussion and said he had not analyzed the cases sufficiently thoroughly to speak authoritatively but he thought that the arguments brought forward as to the cause were weighty. Dr. R. Kerry, of Montreal, said that he had usually considered cases of interstitial keratitis to be either syphilitic or tuberculous; when the former was the case no benefit followed from the use of iodine, but in the latter contingency the disease cleared up promptly, so that there was thus provided a rough and ready test.

HEALTH AND PSYCHOLOGY OF THE CHILD

The recent conference of the Interstate Postgraduate Assembly of America held in London provided "a feast of reason and a flow of soul" from the medical point of view. Indeed, it was a veritable embarrassment of riches from which it is difficult to choose the titbits. The addresses, given by well known British physicians and surgeons, were for the most part excellent, some of them outstanding models of what such addresses should be, while in the hospitals the chemical material with which London abounds was spread for the educational behoof of the visitors, or rather, perhaps, it should be said in order that American and Canadian physicians and surgeons should be able to compare under the most favorable auspices the methods in vogue in the hospitals of their own countries and those of England.

Among the many addresses given was one by H. C. Cameron, physician for diseases of children in Guy's Hospital, dealing with some points in the treatment of functional nervous disturbances in children. This address should be especially interesting to American medical readers as perhaps in no country of the world are children so troubled with nervous disturbances of a functional origin. Dr. Cameron gave a clear analytical explanation of the causes in his opinion of some of the tantrums of children. He pointed out, for instance, that it was necessary to go into the home and the nursery to study the origin of nervous disturbances in childhood, because the

conduct of the unstable child resembled the conduct of the insane in that it was always worse in the intimate surroundings of the home. As soon as the one or other were admitted into a school or hospital there was an immediate improvement.

It was impossible to exaggerate the force maternal attraction exercised, consciously or unconsciously, all day long in everything associated with the child. The egoistical child had little power of selfanalysis, and he judged himself by what he saw in his mother's eyes. One of the results of this excessive mothering was the production of negativism in children. All know the negative child. The proposal of a movement downstairs results in a rush to the top of the house. Dressing is resisted and he will cry just the same when undressed, and it will be found that this is all a response to a particular form of parental management.

The children of selfreliant, determined people, and there are a few left who never contemplate refusal and expect instant obedience, do not show negativism. Dr. Cameron said that children were quick to appreciate the weaknesses of parents and they knew how to get the mother on a vulnerable point. Sometimes it was the sight of tears, but at other times children used different methods. One mother brought her charming child to him and complained that he was interested in everything horrid and gruesome. While he was talking to the mother the child caught up a book on skin diseases and opened it at one of the most repulsive illustrations. He watched the child place himself so that his mother must see, and when she raised her arms in horror the child gave a little shudder of delight. As a matter of fact the boy was not in the least interested in the picture, but he was interested in producing an effect on his mother.

There was, in Dr. Cameron's opinion, a great opening in the nursery today for a sort of elementary psychotherapeutics. It was through the mother and by her that an effect on the child could be produced. The task in the home was to use the tremendous force of maternal attraction for good and not for ill.

A book has just come out in England, published by William Heinemann, Ltd., edited by Dr. Elizabeth Sloan Chesser and contributed to by various authorities in which the psychology of the child is discussed. Dr. Eric Pritchard deals with the psychology of the infant at some length pointing out what is not generally known that infants have a psychology not long after their birth. He traces the development of this psychology and insists with Cameron that suggestion through the mother is the main incentive to action, also that imitation which is instinctive in all children, is the stimulus which leads to many new kinds of reaction while all the actions of the child are reactions to external forms of stimuli. This book, which will be referred to again, is somewhat of a new departure and teaches that children react so greatly to environment that it makes or mars their health, happiness and efficiency in after life. And this fact seems to signify clearly that parents and teachers, and all concerned with childtraining, must have definite knowledge of psychology.

Obituary.

JOHN COOKE HIRST, M.D.

Philadelphia

Dr. John Cooke Hirst, who died in Philadelphia on October 4, 1925, was born in that city in 1875, and was the son of William L. and Lydia Barton Cooke Hirst, and the brother of Dr. Barton Cooke Hirst, professor of obstetrics in the University of Pennsylvania. His early education was acquired at Lawrenceville and the Penn Charter School, Philadelphia, whereupon he took his medical course at the University of Pennsylvania, graduating from that institution in 1897.

During that period he became a member of the Alpha Kappa Kappa fraternity and of the Hirst Obstetrical Society. After a brief residentship at the Howard Hospital he went to Europe, where he spent ten years perfecting his knowledge of obstetrics and gynecology, taking courses at a number of universities in England and on the continent of Europe. Returning to this country he took up the practice of his chosen specialty and became affiliated with a number of Philadelphia hospitals. He became associate in obstetrics in the Undergraduate School of Medicine of the University of Pennsylvania and associate professor of gynecology in the Graduate School of Medicine of the same institution. He was also senior gynecologist and obstetrician to the Philadelphia General Hospital; obstetrician in chief to the St. Agnes Hospital; gynecologist in chief to the Mount Sinai Hospital; and a member of the obstetrical staff of the University Hospital. He was a fellow of the American College of Surgeons and a member of the Philadelphia College of Physicians and of the Philadelphia Obstetrical Society.

For twenty years Dr. Hirst conducted a very popular quizz in obstetrics and gynecology at the University of Pennsylvania, the student participants of which appreciated most highly his forceful, terse, lucid exposition of the principles and practice of these branches through the medium of the quizzes. In late years he was a member of the National Board of Medical Examiners and bedside examiner for the Pennsylvania State Board. Dr. Hirst was a frequent contributor of articles to medical periodicals and a textbook author.

Dr. Hirst's most conspicuous contribution to medical practice was, perhaps, the popularization of the use of corpus luteum and other ovarian products in various gynecological and endocrinic disorders. All who came in contact with his kindly personality and inspiring leadership are mourning the loss of this gifted practitioner and colleague while yet in the prime of his life.

News Items.

New York Academy.—The cornerstone of the new building of the Academy will be laid Friday October 30th, at 4:30 o'clock.

Ether Day.—The annual Ether Day exercises were held at the Massachusetts General Hospital. Dr. John H. Gibbon, of Philadelphia, delivered an address.

Exhibit at New York Academy.—A exhibit of the works of Sir Thomas Brown, physician and author of "Religio Medici," who was born in 1605, is being held at the New York Academy of Medicine.

National Board of Medical Examiners.—It is announced that two additional states, Connecticut and Utah, have agreed to accept the certificates of the National Board. The certificate is now recognized in over thirty states, and also in Great Britain.

Wesley M. Carpenter Lecture.—Dr. Lewellys F. Barker of Baltimore delivered a paper on the Management of Neurotic Patients, before the New York Academy of Medicine, as the Wesley M. Carpenter Lecture.

Presbyterian Hospital.—It is reported that of the $7,000,000 needed for the new Presbyterian Hospital Hospital, $6,250,000 has been subscribed. A committee recently met to plan methods of securing the additional amount.

Flatbush Medical Society.—This society announces that its meetings will be held at the Cortelyou Club, Brooklyn. At the opening session, October 9th, Dr. Emil Goetsch presented a paper on The Pathological Thyroid Gland.

Association of American Medical Colleges.—This association will hold its annual meeting at Charleston, South Carolina, October 26 to 28th. The presidential address by Dr. Hugh Cabot, will be on Should Medical Education be Importantly Recast?

Caldwell Lecture.—Dr. James Ewing, professor of pathology at Cornell University Medical College, delivered the annual Caldwell lecture before the American Röntgen Ray Society, at its meeting in Washington. His subject was Tissue Reactions to Radiation. The lectures are given as a memorial to Dr. Eugene Caldwell, a martyr to the ray.

Downtown Community House.—The cornerstone has been laid for the new Downtown Community House, New York. This will serve as the social service department of the Beekman Street Hospital, and care for the district between Canal Street, the Battery, and Spruce Street.

Clinics at Hospital for Ruptured and Crippled.—Clinics will be held at this institution the second and fourth Wednesday afternoons of the month, at four o'clock, from October to May. These clinics are intended especially for men in general practice. The opening session was October 14th.

Lecture by Dr. Bloodgood.—On Tuesday evening, October 27th, Dr. Joseph Colt Bloodgood of Baltimore, will address the Clinical Society of the Hospital for Joint Diseases, New York City, on The Diagnosis and Treatment of Lesions of Bone in the Earliest Stages, with Special Relation to Biopsy, with lantern slide demonstration.

Prize Award.—A final announcement of the award of the Leonard prize of the American Röntgen Ray Society states that six hundred dollars instead of the total amount of one thousand dollars was given to Dr. Evarts A. Graham, Dr. Glover H. Copher, and Dr. Warren H. Cole of St. Louis, for work on cholecystography; and four hundred dollars to Dr. G. Failla of New York, for work on radon.

American Röntgen Ray Society.—The following officers have been elected by this association: Dr. Russell D. Carman, Mayo Clinic, president-elect; Dr. Patrick K. Butler, Boston, and Dr. Charles M. Richards, San Jose, California, vice-presidents; Dr. William A. Evans, Detroit, Treasurer; and Dr. Charles L. Martin, Dallas, Texas, Secretary. The president for the year is Dr. Thomas A. Groover, of Washington, D. C.

Neuropsychiatric Fellowships.—Three rewards have been made by the Commonwealth Fund toward the five fellowships in neuropsychiatry it has established at the University of Pennsylvania, graduate school. Those receiving the fellowships are Dr. Bertrand J. Alpers of the Orthopedic Hospital, Philadelphia; Dr. Forrest Nelson Anderson, of the U. S. Marine Hospital at Ellis Island; and Dr. Paul Edward Kutitschek of the Ossawatomie State Hospital.

Personal.—Dr. Theobald Smith, director of the department of animal pathology of the Rockefeller Institute, has been nominated president of the International Antituberculosis Society.

Dr. Anthony Bassler of New York spoke before the Academy of Medicine of Columbus, Ohio, on Medical Treatment of Stomach and Intestinal Conditions.

Dr. Gabriel Tucker, of the University Hospital, Philadelphia, presented bronchoscopic and esophagoscopic cases of general medical and surgical interest, before the Buffalo Academy of Medicine, at its first stated meeting, October 7th. Motion pictures showing the technic of esophagoscopic treatment were also shown. A dinner was given by the Academy in honor of Doctor Tucker.

Dr. Joseph F. Saphir of New York has moved his office to 321 West Seventy-eighth Street.

Dr. Joseph Franklin Montague of New York has been elected a fellow of the American College of Surgeons.

Dr. Arthur H. Ruggles of Providence, Rhode Island, has been granted a years' leave of absence as director of the Butler Hospital, to act as consultant in mental hygiene and lecturer in psychiatry at Yale University. He has also been nominated as psychiatrist to the New Haven Hospital and its dispensary, and a member of the board of directors.

Dr. W. B. Cannon of Harvard Medical School spoke before the Buffalo Academy of Medicine on "Some Recent Revelations by the Denervated Heart."

Dr. Helen Ingleby of London is succeeding Dr. Maude Abbott, of the Women's Medical College of Philadelphia, as professor of pathology. Doctor Abbott is returning to McGill University.

Dr. Emanuel Giddings, of the Willard Parker Hospital, New York, has been appointed superintendent of the Reconstruction Hospital.

Dr. John Oberwager, of New York, formerly assistant to the health commissioner, has been appointed to the newly created position of director of publicity and public health education.

Dr. Albert K. Aldinger, director of physical education for the Brooklyn Board of Education, has resigned to accept a similar position at the University of Vermont.

Dr. Bernard Weiss of New York has removed his office to 415 Lexington Avenue, Central Terminal Building.

Dr. Algernon Coolidge, for thirty-two years connected with and for fourteen years professor of laryngology, Harvard University Medical School, has retired and been elected professor emeritus.

Letters to the Editor.

DR. OCHSNER

3 Rue Bellot, Geneva, Switzerland,
September 19, 1925.

To the Editor:

It is with sincere regret that I learn through your columns of the death of my friend, Albert J. Ochsner. May I be allowed to add one more detail to the obituary notice appearing in your issue of August 19, 1925, as it is not devoid of historical interest?

Dr. Ochsner was a lineal descendant of the mother of Paracelsus, whose maiden name was Ochsner. This datum was given me some years ago in an autograph letter from the illustrious Chicago surgeon.

Prof. Charles Greene Cumston.

SHORT STORIES BY DOCTORS

New York, *October 8, 1925.*

To the Editor:

I am interested in compiling a collection of short stories written by doctors. As many of these stories are published under assumed names, or the medical degree of the author is omitted, it is difficult to locate them. I am, therefore, writing to ask that if you or your readers know of any short stories published by medical men you will kindly communicate the fact to me.

I assure you that any information relative to this matter will be greatly appreciated.

Harold Hays, M.D.

22 West Seventy-fourth Street.

Book Reviews

CLINICAL MEDICINE

Einführung in die klinische Medizin. Eine kurze Darstellung ihrer Grundbegriffe. Von Walter Marle. 2. Band: Innere Medizin—Neurologie—Psychiatrie. Mit 220 Abbildungen im Text. Berlin und Wien: Urban & Schwarzenberg, 1925. Pp. viii-313-566.

The entire series of this publication will include four volumes. This, the second volume, contains the parts referring to internal medicine, neurology and psychiatry.

The part dealing with internal medicine includes the infectious diseases; diseases of the respiratory system and the heart and aorta; diseases of the digestive tract arranged according to the organs involved; diseases of the liver and spleen, the pancreas and peritoneum; diseases of the kidneys and the urinary bladder; diseases of the locomotor apparatus; diseases of the blood and bloodforming organs; metabolic diseases; endocrine diseases, and other miscellaneous diseases.

The neurological portion includes chapters on general neurology; diseases of the peripheral nerves; diseases of the spinal cord and of the medulla oblongata; diseases of the brain, and other diseases of the nervous system.

The subject of psychiatry is divided into general psychiatry and special psychiatry.

PREVENTIVE MEDICINE

Preventive Medicine. By Mark F. Boyd, M.D., M.S., C.P.H. Second Edition Revised. With 135 Illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 429.

This book is presented as containing the minimum knowledge of the subject of preventive medicine which a student of medicine or a practitioner should be expected to possess. The bibliography contains references for those desiring a broader knowledge of the subject. The trend in the practice of medicine and the laity both demand a change in medical tactics at the hands of the general practitioner and such a demand the book in question is well able to fulfill. The general practitioner must realize his responsibilities in matters of public health. While nothing new or startling is presented, the material is written and arranged in such a way as to impress upon the reader the necessity for the prevention of disease rather than the cure.

The book is divided into three sections. The first section deals with diseases due to invading microorganisms and epidemiology, including such subjects as sources of infection, dissemination of infective agents, contact transmission, diseases transmitted solely, usually, and frequently by contact, respectively, general measures of disease control, disinfectants and disinfection, excreta disposal, relationship of water to health and disease, water purification, production and inspection of milk, milk and other food stuffs as a route of infection, insects as vectors of infective agents, diseases transmissible by insects, lower animals as sources of infection for man, and other aspects of infectious diseases.

The second section is concerned with deficiency diseases, food requirements, their production and retail, and diseases due to dietary deficiencies.

The chapter on occupational diseases includes hazards of occupation and occupational intoxications and diseases.

The inclusion of a chapter on diseases arising from the puerperal state in a book of this kind is a step in the right direction. The same may be said of the chapter on diseases transmitted from parent to offspring (hereditary).

The chapter on the special aspects of hygiene and sanitation includes the subjects of hygiene of infancy and of childhood, heating and ventilation, and certain aspects of personal hygiene.

The section on demography includes statistics of population, of births and deaths and of sickness.

The final section deals with public health administration.

The style is simple and to the point and the subject matter is up to the minute. The book should be of value to hygienists and public health administrators, as well as to the general practitioner.

SYPHILIS

La Syphilis, son Aspect Pathologique et Social, Par E. Jeanselme. *Science et Civilisation* Series, published under the direction of M. Solovine. With 24 illustrations. Paris: Gauthier-Villars et Cie., 1925. Pp. 405.

The author, a well known syphilographer, presents the subject of syphilis in its many phases, in this pocket size monograph. Beginning with the history of its origin and invasion of Europe, he takes up the study of the subject from the viewpoint of the individual as well as that of the community.

The treatment of syphilis is considered at length and it is interesting to note that the author regards bismuth as superior to mercury but slightly inferior to the arsenicals as regards the clinical manifestations of the disease and the seroreaction.

A considerable portion of the volume is devoted to the administrative and legislative measures in France and other countries aiming to control the spread of the disease and minimize its ravages.

The author has managed to say a great deal, all of it worth while, within the covers of this little volume. It can be recommended as a trustworthy and up to date guide on the subject of syphilis.

DIABETES

Verordnungsbuch und Diätetischer Leitfaden für Zuckerkranke. Von Professor Dr. Carl von Noorden und Professor Dr. S. Isaac, Mit 172 Kochvorschriften. Zum Gebranche für Arzte und Patienten. Zweite verbesserte Auflage. Berlin: Julius Springer, 1925. Pp. viii-130.

Numerous handbooks for the use of the physician and patient in the preparation and selection of diabetic diets have been published, and, as usual, there is room at the top of the list. A work by von Noorden and Isaac must undoubtedly be accorded such a place. The necessity of a second edition after a period of a year and a half shows the popularity of this book. Numerous changes and additions, occasioned as a result of riper experience and the availability of additional foods, have been made. The number of dietary lists has been increased and the directions for the preparation of foods have been simplified and given in greater detail. Special attention is given to the

selection of foods, which considerably enhances the value of this book.

The first section includes a grouping of foods into main and additional diets, according to carbohydrate, protein and fat constituents and calories. The second section goes into greater detail regarding the food elements. The third section deals with the arrangement of meals. The fourth section discusses the various types of diets. The fifth section gives directions for the collection of urine. The rest of the book includes a table of comparative weights and measures, directions for the preparation of diabetic foods, and a directory of diabetic food manufacturers.

On the whole, it may be said that this little book is the best of its kind and the most inclusive. It ought to be translated into English and other languages.

DYSPEPSIA

Dyspepsia. Its Varieties and Treatment. By W. Soltau Fenwick, M.D., B.S. (Lond.). Second Edition, Revised. Illustrated. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 515.

The first edition of this book, published in 1910, has been out of print for some time. The new (second) edition is larger than the original by about thirty pages. The chapter on displacements of the viscera has been rewritten. Otherwise in form and arrangement the work remains the same—a sound conservative clinical exposition of the old school type, before the x ray era.

CATATONIA

Katatonische Erscheinungen im Rahmen manischer Erkrankungen. Von Dr. Med. Johannes Lange. Privat dozent, Assistent an der psychiatrischen Universitatsklinik, München. Mit 5 Textabbildungen. Monographien aus dem Gesamtgebiete der Neurologie und Psychiatrie Herausgegeben von O. Foerster-Breslau und K. Wilmanns-Heidelberg, Nr. 31. Berlin: Verlag von Julius Springer, 1922.

Lange has made a study of the frequent incidence in manic depressive disease of the symptoms of catatonia—by which he means all the catatonic symptoms peculiarly characteristic of schizophrenia. He questions, but finds no convincing proof of, the existence of a heredity which would form the common basis for the latter disease and this frequent appearance of its symptoms in the former disorder. Manic depressive psychosis, we may mention, he tacitly assumes as a disease entity. Nevertheless, he examines the material for his study not on dogmatic grounds but in a spirit of open inquiry. He seeks to know the causes of the frequent appearance of these symptoms, the form which they take, the course and the outcome of the disorder in which they appear, considering rather a clinical unity than a theoretical entity as the subject of investigation. He admits the occurrence of similar symptoms even in healthy persons under certain conditions but inclines to the possibility at least that a hereditary disposition, akin to the schizophrenic inheritance, underlies the marked presence of such manifestations in the manic depressive situations, this then being acted upon by external causes. Among his valuable clinical observations he notes the presence of such symptoms if manic depressive disease appears distinctly in childhood, also in old age, probably depending in large part upon extraneous factors, among which are the peculiar psychic conditions incident to either extreme period of life. Infectious or organic diseases seem to have little power to precipitate the manifestations; neither do the latter appear to be roused by childbirth, contrary to general belief. Alcohol, and possibly scopolamin, has a positive effect. The schizophrenic symptoms may be present in manic depressive psychosis associated with congenital feeblemindedness but here the picture is vague and obscure although severe excitement and stupor are present.

REJUVENATION

Die Verjüngung der Frau, zugleich ein Beitrag zum Problem der Krebsheilung (The Rejuvenation of Women with a Contribution to the Problem of Cancer Cure). Von Dr. Manfred Fraenkel, Berlin. Berne-Leipzig: Ernst Bircher, 1925.

Fraenkel's book or better his pamphlet on the rejuvenation of women has caused many comments in European medical, as well as lay circles. The book is written in a popular way so as to be intelligible for the laity also and this, naturally, deducts much from its strict scientific value. Fraenkel has followed the way which Steinach has shown in attempting to retard the process of aging in stimulating endocrine functions. Mild x ray radiations on the ovaries is the method employed.

Fraenkel, who is the foremost advocate for the value of small stimulating x ray doses, especially to the endocrine glands, has based his observation on a great number of cases. He has treated in the course of many years six thousand women with uterine fibroids and has not only noted in these cases incidental rejuvenating influences, but has also based his conceptions of cancer treatment and cancer prevention on those clinical experiences. He expresses the rather daring and somewhat startling idea that by timely rejuvenation treatments, cancer can be prevented in many instances and he recommends mild x ray radiations for this purpose, almost comparable to vaccination.

Fraenkel's work in general is bound to arouse a still wider interest and his clinical observations, as well as his animal experiments and often ingenious deductions, certainly deserve fullest attention from the side of the medical profession.

DISEASES OF LOWER RESPIRATORY SYSTEM

Diseases of the Bronchi, Lungs and Pleura. By Frederick T. Lord, M.D. Second Edition, Thoroughly Revised, with the Addition of a Chapter on Pulmonary Tuberculosis. Illustrated with 107 Engravings and 3 Colored Plates. Philadelphia and New York: Lea & Febiger, 1925.

This is a masterly presentation of the diseases of the lower respiratory system. It is the second edition of Dr. Lord's book of nearly 800 pages, with 107 engravings and 3 colored plates. The first chapter deals with the tumors of the bronchi, syphilis, tuberculosis of the bronchi, scleroma, aspirated foreign bodies, and foreign bodies arising within the bronchi. This chapter contains an interesting description and an excellent illustration of the manipulation of Jackson's bronchoscope. The following three chapters deal with brochial asthma, bronchitis fibrinosa and bronchitis obliterans. The fifth chapter treats of the various forms of bronchitis, and chapter six of acquired and congenital bronchiectasis. A short description is also given of bronchomoniliasis and bronchospirochetosis. Naturally the diseases of the lungs

occupy the largest portion of the book and excellent descriptions are given of atelectasis, emphysema, pulmonary tuberculosis, lobar pneumonia, Friedlander's bacillus pneumonia, psittacosis, bronchopneumonia, subacute and chronic indurative pneumonia, pneumonoconiosis, pulmonary abscess and gangrene, circulatory disturbances, pulmonary thrombosis, embolism and infarction, hemoptysis, pulmonary syphilis, pulmonary actinomycosis, pulmonary streptothricosis, pulmonary blastomycosis, pulmonary coccidioidal granuloma, torula infection of lung, pulmonary aspergillosis, pulmonary moniliasis, pulmonary sporotrichosis, animal parasites, tumors of the bronchi and lung, lung hernia, and pulmonary arteriosclerosis.

It is of course difficult to advance anything new concerning these often described diseases. The one which is not often mentioned in textbooks is psittacosis. This is a type of severe, acute pulmonary infection occurring for the most part as house epidemic and thought to be due to transmission from diseased parrots to men, hence the name psittacosis (from Ψιττακος parrot). The author devotes an interesting chapter to the bacteriology of this comparatively rare but rather serious disease which claims a mortality of over thirty per cent.

In the chapter on pulmonary tuberculosis, Lord raises the question of merit or demerit of tuberculin as a means of diagnosis and also of treatment. After describing the various forms of cutaneous tests, he says: "The almost universal acquisition of infection with tubercle bacilli by the time the age of childhood is passed diminishes the value of the tuberculin test for the diagnosis of tuberculous disease to such an extent that the procedure has been largely abandoned." However he admits that the subcutaneous test is of value in the exclusion of active tuberculosis. Concerning the therapeutic results of treatment with tuberculin, he comes to the conclusion at which most tuberculosis specialists have arrived, namely, that tuberculin, even when given in addition to the sanatorium treatment, has no appreciable effect either for good or ill.

When speaking of pregnancy in tuberculosis, the author fails to emphasize the great importance of placing the prospective tuberculous mother immediately on a sanatorium régime, whether interruption of pregnancy is indicated or not. Under surgical treatment, the newer methods of Tuffier's pneumolyses and the insertion of foreign (free fat) bodies to fill the resulting cavities after operation, phrenicotomy, and extrapleural thoracoplasty are given rather short consideration in view of the frequent use of surgical measures in pulmonary tuberculosis.

In the chapter on pneumonia, describing the various types, an excellent description is given of the serum therapy in affections due to the pneumococcus. The chapter on pulmonary abscesses is interesting, but nothing new is offered. A case of recovery without operation is illustrated by x rays. Under pulmonary edema it will interest those of war experience to note that according to this author chlorine, phosgen, and chlorpicrin are the most important of war gases that produce congestion and edema.

In the last portion of the book ordinary and special forms of pleuritis, hydrothorax, hemorrhagic pleurisy, chylothorax, tumors of the pleura, ecchinococcus disease of the pleura, and pneumothorax receive careful consideration. Altogether the book gives an excellent idea of what we know today of diseases of the bronchi, lungs, and pleura; and while the tuberculosis specialist may perhaps not find therein anything new, to the general practitioner and senior medical student the book offers valuable information, indispensbale to one who wishes to be a conscientious and well informed internist.

MODERN PROBLEMS IN BIOLOGY

Moderne Biologie. Hefte 8. Bakteriolyse einsichten und aussichten von Dr. Arthur Haim. Heft. 9: Aphorismen zum Heilproblem. Von Dr. Hans Much. Dr. Arthur Haim. Leipzig: Curt Kabitzsch, 1925. Pp. 83.

Haim's book is a timely little monograph on some of the modern puzzles in bacteriology, such as the lytic phenomenon of d'Herelle, Much's lysin, and other of the curious lytic phenomena which have been discovered within the last few years.

In volume IX Dr. Much presents a rather philosophical discussion of some of the fundamental principles of pathology and therapy.

ELECTRICAL INJURIES

Der Elektrische Unfall. Skizziert für Ingenieur und Arzt. Von. Prof. Dr. Med. Stefan Jellinek. Mit 25 Textabbildungen. Leipzig und Wien: Franz Deuticke, 1925. Pp. v-142.

In this brochure the author relates his experiences with accidental electrical injuries during a period of twenty-five years, giving an account of actual experiences and experiments conducted by himself. He laments the fact that much of our supposed knowledge of these accidents is based on experimental observations on animals which is not directly applicable to the human being injured accidentally. The extent of the danger cannot be measured by the nature of the current (alternating or direct), its tension (high or low) and the strength of the current, but technical and biological conditions must also be taken into consideration. Intense attention and great will power in an individual may not only diminish the effect of an electrical shock but may even counteract its effects. The possibility of resuscitation depends upon the rapidity with which artificial respiration is induced and upon the length of time it is carried out. Too often the belief that the injured individual is beyond recovery and the consequent cessation of artificial respiration robs the patient of all hope of recovery.

The mistakes regarding electrical injuries are scored. Distinction is made between electrical and other accidental injuries. The material and the location, the electrical lamp and poor workmanship, are most often responsible for the accident. Numerous examples from the author's experience are cited. There is also the individual factor, as some persons are more susceptible to electrical injury than others. The effect upon health may be classified into those occurring during the passage of the electrical current, the symptoms immediately following the release of the body from the current, and the subsequent disease picture. The manner of treating these injuries, in which conservatism is the keynote of success, is described. Attention is called to the appearance of suspended animation and the necessity of continued efforts at resuscitation is repeatedly emphasized.

On the whole, this is a very praiseworthy presentation of a subject of which too little authentic knowledge is generally available.

Medicoliterary Notes.

The *Porto Rico Health Review* is the title of a new journal recently established by the Department of Health of that island. It will be published monthly. The first number contains articles describing the work of the department in the fields of hookworm, tuberculosis, plague, and venereal diseases.

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Fall publications announced by Henry Holt & Company are *Democracy*, a novel by Henry Adams, author of the famous *Education; Sweet Times and the Blue Policeman*, a book of children's plays by Stark Young; *Romance—the Loveliest Thing*, a first novel by Dorothy Black; *Pluck and Luck*, by Robert Benchley; *Dawgs!* compiled by Charles Wright Gray, including dog stories by Booth Tarkington, Don Marquis, Albert Payson Terhune, and Emma Lindsay Squier; *Slow Smoke*, a collection of poems by the "wilderness poet," Lew Sarett; *Foolish Fiction*, by Christopher Ward, parodies of current fiction; and *Memories of Ninety Years*, by Mrs. E. M. Ward.

* * *

A document of unusual interest recently published is the report of the Texas Eleemosynary Commission. This commission was appointed in 1923 to make a study of conditions existing in the greatly overcrowded state institutions for the insane, the mentally defective, the epileptic, the tuberculous, delinquent children, orphans and other dependent children. It was to direct attention particularly toward the prevention of mental disease, feeblemindedness, delinquency, and the increase of state dependents; the care and custody of the criminal insane; the revision of laws governing the commitment, parole, discharge, care and custody of inmates of state eleemosynary institutions. The report consists of three parts: 1, a preliminary report of the Commission, with recommendations to the Legislature; and, 2 and 3, the report of the mental hygiene survey of Texas made by the National Committee for Mental Hygiene under the auspices of the Commission.

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Much publicity has been given by the press to the statement made by an English physician at a late meeting of the Royal Society that women have become much healthier since they have discarded heavy clothing. One of the illustrations given was that chlorosis has practically disappeared with the cessation of lacing and the wearing of tight corsets. But a new disease has appeared to take the place of chlorosis—a chronic indurative erythema of the legs of girls and young women, and it has been suggested that the cause of this disease is lack of protection of the lower legs, due to short skirts and thin silk stockings.

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One of the recent biographies of President Washington states that when the great statesman had nothing else to do, he usually went out and counted something, then set it down on paper. He made inventories of farm implements, slaves, cubic contents of various things, furniture, logs, trees in various places, and carefully computed estimates of expenditures. He once even counted the number of clover seeds in a pound, and found there were 71,000.

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A personality study of interest will be Albert Bigelow Paine's biography of Joan of Arc announced by Macmillan for publication the latter part of October. The author has endeavored to present the maid from the point of view, not of history, but of her contemporaries. Her trial is quoted verbatim, in so far as that is possible, all of Joan's known utterances are given, as well as the text of all her letters still extant.

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Dean Roscoe Pound of the Harvard Law School, discussing the present campaign against crime and lawlessness in a recent issue of the Boston *Herald*, declares that we do not even know the extent of crime in this country. Our statistics are largely unclassified and very incomplete, in marked contrast to those of European cities. He states that our present judicial system was devised for a rural, pioneer, agricultural America, and applies very little and very ineptly to an urban, industrial civilization, and suggests the establishment of an endowment for scientific research into the whole question of crime and its causes, to take the place of "hysterical crusades." He characterizes lawlessness and the attempt to check lawlessness by strong arm methods as parts of the same social disease.

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During the past fifty years there has been not only a decrease in the fertility of marriages, but also a decrease in the number of marriages themselves, according to Sir William Beveridge, writing in a recent issue of *Economica*. The changes he attributes to human purpose, and to birth control propaganda, and declares that our present problem is to find out how to apply the principle of birth control for the good of the race.

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A new edition has recently been published by Doran of Oliver Day Street's book on Masonic symbols, entitled *Symbolism of the Three Degrees*. This forms volume three of the National Masonic Library, and this second edition is announced as rewritten and greatly enlarged.

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An organization for the welfare of the physically handicapped in Minnesota has recently been formed as the Minnesota Conference for the Disabled. The objects are the rehabilitation of disabled persons, the correlation of activities concerning them, and the creation of an agency to receive and administer special funds for them.

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Michigan state pharmacists have decided to ask the legislature of Michigan to permit drug store ownership to registered pharmacists only, the granting of pharmacists' registration to citizens only, and college of pharmacy graduation prerequisite to state board examination.—*Nation's Health.*

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A list of floor plans of mental hospitals and training schools for the feebleminded has recently been issued by the National Committee for Mental Hygiene. The plans are listed both geographically and according to type of building.

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Industrial Psychology is the title of new publication recently announced, of which Dr. Donald A. Laird of Colgate University will be psychological editor, and Percy S. Brown, works manager of the Corona Typewriter Company, head of the industrial board.

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A bill has been passed in Louisiana requiring every male to pass a physical examination and to present a doctor's certificate showing that he is free from venereal disease before he can obtain a marriage license.

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Some late British and foreign publications of interest to the medical profession are: *Health and Environment*, by Leonard Hill, M.B. (Arnold, London); *Sept Maladies de la Bouche*, by Dr. R. Nogue (Baillière, Paris); *Introduction to the Mind in Health and Disease*, for Students and General Practitioners Interested in Mental Work, by T. Waddelow Smith (Baillière, London); *Radiological Examination of the Male Urethra*, by G. L. S. Kohnstam and E. H. P. Cave (Bailliere, London); *Hemoptysis in Pulmonary Tuberculosis*, by Dr. Marc Jacquerod, translated by S. F. Silberbauer, M.D. (Baillière, London); *Aids to Surgical Diagnosis*, by Cecil P. G. Wakeley (Baillière, London); *Bilharzia*, a Paper for the Practitioner, by F. Gordon Cawston, M.D. (Bale, London); *Slit Lamp Microscopy of the Living Eye*, by Dr. F. E. Koby (Basle) translated by Charles Goulden and Clara Harris, M.B. (Lane, London); *Electrotherapy and Ionic Medication*, by H. H. U. Cross (Griffin, London); *The Stomach and Upper Alimentary Canal in Health and Disease*, by S. Izod Bennett, M.D. (Heinemann, London), *Treatment of Gonococcal Infection by Diathermy*, by E. P. Cumberbatch and C. A. Robinson, M. B. (Heinemann, London); *Chronic Disease*, a Working Hypothesis, by E. Bach, M.B. (Lewis, London); *Alcohol in Medical Practice*, by Courtenay C. Weeks (Lewis, London); *Preliminary Report on the Treatment of Interstitial Keratitis*, by R. Lindsay Rea, M.D. (Lewis, London); The Fats, by J. B. Leathes, M. B., and H. S. Raper, M.B. (Longmans, London); *Facts About Artificial Sunlight*, by Edwin L. Ash, M.D. (Mills, London); *Moralisings of a Medico;* being a mixed medley of many memories of medical student days in Edinburgh, by Adair Dighton (Step, London); *Chirurgie der Niere und des Harnleiters*, ein Lehrbuch, by Dr. James Israel and Dr. Wilhelm Israel (Thieme, Leipzig); and *Encouragement in Cancer Surgery*, by G. Grey Turney (Wright, Bristol).

Abstracts from Current Literature

PEDIATRICS

Spastic Bronchitis in Infancy and Childhood.—Kurt Ehle (*Monatsschrift für Kinderheilkunde,* April, 1925) abandoned the use of atropine sulphate and adrenalin chloride in spastic bronchitis of infancy and childhood because the results therewith were not very encouraging. His best results were obtained with urethan, which acts in two ways: by directly paralyzing the peripheral nerve endings of the vagus and by producing a central anesthesia and preventing muscular spasm by acting on the vagus centre. In the acute cases urethan is unequalled.

The first symptom is restlessness. There is an expiratory stridor, the facial expression is anxious and the head is retracted. The anterior margin of the lung is generally at the costal arch and the posterior at the eleventh or twelfth rib. The clinical picture is one of bronchotetany.

The author uses a dose greater than that usually recommended. Up to four months of age he gives 0.3 to 0.5 gm. by mouth, or 0.8 to 1.0 gm. by enema; from four to six months of age he gives 0.6 to 1.0 gm. by mouth, and 1.5 gm. by enema; from seven to twenty-four months of age, he gives 1.5 gm. by mouth and 2.0 gm. by enema. If necessary, two thirds of these doses may be repeated after half an hour. Small doses of bromine are also useful. It reduces central excitability. The prophylaxis includes the avoidance of all unnecessary excitement and disturbance.

Rheumatic Infection in Childhood: The Subcutaneous Fibroid Nodule as an Early Manifestation.—It has been stated that subcutaneous rheumatic nodules usually appear only in grave affections associated with gross cardiac disease. Arguing, however, on analogy with the findings in adults suffering from fibrositis, it did not seem improbable that nodules less obvious than those of graver infection might be discovered in subacute cases. When this suggestion had been established in part by the examination of children known to be suffering from rheumatic infection, Vincent Coates (*British Medical Journal,* March 21, 1925) examined one hundred consecutive children between the ages of two and twelve years very carefully for subcutaneous nodules irrespective of the complaints.

In searching for the nodules particular attention was paid to the spinous processes of the vertebræ and to the olecranon process. The nodules appeared to vary in size from a small sago grain to that of a pin's head, and were often in small clusters. Synovitic creaking was often obvious round the vertebral spines and is most characteristic. Of the one hundred children, twenty-three gave a history suggesting rheumatic infection, and in these no other causes of a toxic state could be elicited except Ascaris lumbricoides in two instances, efficient treatment of which did not alleviate the symptoms.

Significance of Colloid Reactions in the Cerebrospinal Fluid in the Diagnosis of Nervous Diseases in Childhood.—Alfred Marchionini (*Monatsschrift für Kinderheilkunde,* April, 1925) states that according to the examination of the cerebrospinal fluid with the normomastic reaction in eighty cases of nervous diseases in childhood, the colloid re action has a not inconsiderable significance. This reaction shows three types of curves: a normal, a luetic, and a meningitic curve.

The finding of a normal curve—the absence of precipitation—shows definitely that a luetic process in the central nervous system, which leads to pathological changes in the cerebrospinal fluid. does not exist (excluding the neuroluetic etiology in idiocy, imbecility, epilepsy, etc.). It also makes it possible to differentiate sharply between meningismus and acute toxic hydrocephalus, on the one hand, and tuberculous meningitis and purulent meningitis, on the other, because the former group never, and the latter always, produce a pathological change in the colloid curve.

The luetic curve, characterized by flocculation on the left, indicates a luetic process in the central nervous system. The nature of this process, whether general paralysis, tabes dorsalis, cerebral syphilis, or syphilitic meningitis, cannot be definitely recognized from the colloid curve alone; a differential diagnosis can be made only in conjunction with the history and cliniconeurological findings. The colloid reaction is more delicate than the Wassermann reaction in the cerebrospinal fluid; it appears earlier and disappears with the recovery later than the Wassermann reaction. The diminution in the breadth and depth of the curve may give prognostic indications in the sense of a cure in treated cases of nervous syphilis.

The meningitic curve, characterized by flocculation on the right, definitely indicates a suppurative or tuberculous meningitis. Tuberculous meningitis shows a slight flocculation (+) in one or two tubes, whereas the suppurative type shows an intensive reaction (+ + or + + +) in three to five tubes. The possibility of a prognostic evaluation of the meningitic curves has not as yet been proved. In many cases the cerebrospinal fluid shows luetic curves in multiple sclerosis, epidemic encephalitis, and in acute anterior poliomyelitis.

Irradiation of Milk and the Healing of Rickets.—S. J. Cowell (*British Medical Journal,* March 28, 1925) tested the efficacy of irradiated children's food as a promoter of the calcification of bone. Three young children with active rickets, as determined by radiographic examination of their wrists, were given a diet, which was not in itself calculated to promote particularly rapid calcification of their bones. One pint of milk in the twenty-four hours was given them, and this was virtually the only source of antirachitic vitamine in their diet. The milk destined for two of the children was exposed to the rays of a mercury vapor lamp of the Hanot type before it was given to them, while the third child received untreated milk. The irradiation was carried out twice a day by exposing the milk in a wide shallow dish for twenty four minutes at a distance of three feet from the lamp. At the end of four weeks the children's wrists were again roentgenographed. It was plainly visible that in the case of the child that received untreated milk there was during the month only a slight increase in the amount of calcification at the lower ends of the radius and ulna, while in the case of the two children that had received milk that had been exposed to ultraviolet rays dense calcification had taken place, much in excess of what one would expect to have occurred in this short time as the result of giving this particular diet.

This quite definite and remarkable "activating" effect of ultraviolet rays on foodstuffs is obviously well worth following up, and opens up new possibilities in the treatment of infantile disorders.

Throat Infections in Children.—Joseph Brennemann (*Archives of Pediatrics,* March, 1925) states that the diagnosis of throat infections in children is usually easy but by no means always so. It is usually based on one or all of the following conditions:

1. The history of a cold, cough, or sore throat. All of these may be absent. It must always be remembered that young children only exceptionally complain of sore throat.

2. Examination of the throat itself. Early this rarely leaves much doubt, commonly none if one is accustomed to the appearance of the normal throat. It is often of distinct value in diagnosis to recognize the peculiar type of throat that is prevalent at the time. Spots on the tonsils must never be considered a desideratum, as in infancy a follicular tonsillitis is a rarity and in early childhood it is relatively infrequent. The younger the child the more surely is the whole throat and nasopharynx involved.

3. The fact that there is an epidemic and that the present case has some of its characteristics.

4. The fact that other members of the family are afflicted with the disease in a more evident manner than is the child himself. This is often of great value in doubtful cases.

5. The fact that certain complicatoins exist that occur with nothing else. An otitis media, an acute cervical adenitis, a cough, a laryngitis, tell one unmistakably that we have or have had a throat or nasopharyngeal infection, no matter how normal the throat may appear at the time of examination. Conjunctivitis, gingivitis, arthritis, pyelitis, petechial hemorrhages are not pathognomonic but strongly suggestive, especially at certain times.

In the differential diagnosis only one thing must be emphasized. It is almost the rule that these cases, unless there is an evident pneumonia, are called "intestinal trouble." Especially is this true of those cases in which there is vomiting and diarrhea, but it is also true of those with protracted fever

in which there is no outstanding evidence of an upper respiratory tract infection.

All of these infections are, of course, contagious and should be treated as such. Isolation in the family is useless unless immediate, complete, and prolonged. The possibility of building up the individual resistance to autoinfections, to catching cold from chilling, exposure, etc., must be thought of. Vaccine therapy is not yet of much value. Hardening with cold baths, outdoor life in nearly all kinds of weather, moderate clothing, and care in the avoidance of chilling, wet feet, etc., doubtless have good effect. In this country this effect is largely nullified by overheated living quarters. Adenoidectomy is of undoubted value at any age, in mouth breathing, in repeated infections, in insidious deafness, in facial and palatal distortion, in nocturnal restlessness and resulting stupidity, nervousness, poor appetite, and malnutrition. Opinion is still divided regarding the value of tonsillectomy. However, it must be remembered that the tonsil is not the atrium of infection nor does it bear the brunt of it, in young children, and especially not in infants.

The paramount indication in every case that has any fever is rest in bed, till at least a day or two or more after the temperature is normal. Salicylates have a beneficial effect if given in large doses, say a grain for each year every three or four hours. No local treatment is indicated except a bland oily substance, perhaps containing menthol, to clear the nostrils in babies; or a steam inhalation of benzoin and oil of eucalyptus, or wet compresses about the throat or chest for persistent cough. Temperatures above 104° require the initially tepid pack kept wet with cooler water.

Rat Bite Fever in an Infant.—Leon H. Dembo, H. O. Ruh, Warren C. Fargo and George R. Taylor (*American Journal of Diseases of Children,* February, 1925) report a case of rat bite fever in an infant aged seven months, in which the clinical picture was essentially the same as that described by other authors. The Spirochaeta morsusmuris was recovered from serum taken from the bite wound, by examination under dark field illumination. Recovery took place under sulpharsphenamin therapy, three injections, each of 0.05 gm. sufficing.

Prophylaxis is best accomplished by complete cauterization of the wound as soon as possible after the bite. Pure phenol is the best agent, and this should be supplemented by wet dressings of a mercuric chloride solution (1: 3000). The injection of a five per cent. phenol solution about the wound has been recommended. Arsphenamine, neoarsphenamine or sulpharsphenamine act specifically. Many of the cases reported have cleared up after one injection, while protracted cases eventually yield to repeated injections. Therapy along other lines is largely symptomatic. The opiates, acetyl salicylic acid or acetphenetidin may be administered to relieve the muscular pains. Fever may be partially controlled by tepid sponging and the judicious use of coaltar products. The diet should be light and nutritious. During convalescence, bitter tonics or an iron and strychnine combination are valuable aids.

Weak and Flat Foot in Children.—Samuel W. Boorstein (*Archives of Pediatrics,* March, 1925) draws the following conclusions:

1. Weak feet and foot strain are present in children though not to the same extent as in adults and should be treated before disastrous results ensue.
2. The predisposing causes are general weakness, excessive weight, rickets and contracted tendo Achillis.
3. The direct cause is disproportion between the strength of the foot and the strain to which it is subjected.
4. The symptoms of weak feet in children are deformity, tired feeling when walking, and occasionally pain.
5. The proper shoe from early childhood is a very important item as a preventive of future disability.
6. The child should be instructed to stand and walk properly, viz., the feet parallel or even slightly turned in.
7. The causing factor, as knock knees, etc., must be remedied so as to prevent recurrence of the foot disturbance.
8. The acute foot strain should be relieved by rest and adhesive plaster strappings.
9. The flexible weak feet are treated by strappings and exercises.
10. The short tendo Achillis should be lengthened either by stretching or open operation.
11. If the case is severe a metal support may have to be prescribed but this must be constructed scientifically so that the child should not depend permanently on this support.

Splenomegaly in Infants and Children.—Thomas E. Buckman (*Medical Clinics of North America,* March, 1925) states that practically every case of enlarged spleen can be placed in one of four groups, namely, the acute infectious group, the tumor group, the hemolytic jaundice group, and the cirrhosis group. It is often difficult if not impossible to decide in the present state of our knowledge the exact diagnosis in a given case, but it is usually possible to tell whether the underlying condition is fundamentally an acute infection, a tumor, hypersplenism, or a cirrhosis. Removal of the spleen is, of course, contraindicated when the cause of the enlargement is an acute infection. Except in the case of Gaucher's disease splenectomy should not be performed if the cause of the splenomegaly is a tumor in the sense here used. On the other hand, benefit is to be expected from splenectomy in hemolytic jaundice and in cirrhosis of the spleen whatever the cause. It has been said that splenectomy should be done in every case in which an enlarged spleen persists unless an internist can show cause why the spleen should not be removed. The burden of proof is put on the internist. The author agrees with this attitude, but it is important to remember that the internist can often show cause why the spleen should not be removed.

Studies on the Carbohydrate Metabolism of Infants.—Frederick F. Tisdall, T. G. H. Drake, and Alan Brown (*Journal of Laboratory and Clinical Medicine,* June, 1925) explain a procedure for blood sugar determination based on the Shaffer-Hartman method which requires only 0.2 c.c. of blood. Twenty approximately normal infants showed an average fasting concentration of blood sugar of 0.087 per cent. In twelve cases of marasmus the average concentration was 0.070 per cent. Values as low as 0.050 per cent. were obtained in the latter group. When five, ten, and fifteen per cent. solutions of glucose are given interstitially to normal infants, the blood sugar curve reaches its height about half an hour after the injection is given. This rapidity of absorption is of practical value when an intravenous injection cannot be given readily. The rise in blood sugar concentration in normal infants is more marked after the interstitial injection of ten per cent. glucose than after the interstitial injection of five per cent. glucose. The fall in the blood sugar curve after interstitial injections of glucose occurs with remarkable rapidity. The intravenous injection in normal infants of large amounts of glucose, i. e., one gram of glucose to the pound of body weight, is followed by a rapid diminution of the blood sugar concentration, after the preliminary rise. One hour after injection, the concentration may be actually less than that found before the injection. Infants with conditions such as acute intestinal intoxication and fermentative diarrhea are unable to utilize glucose introduced parenterally with the same rapidity as normal infants. Attention is again directed to the tremendous ability of the normal infant to utilize glucose introduced parenterally.

Association of Anemia and Pneumonia in Infants; Treatment by Blood Transfusion.—Ten cases of pneumonic infections occurring in anemic infants are described by Murray H. Bass (*American Journal of Diseases of Children,* March, 1925). All of these were treated by means of human blood transfusions. The results show that the addition of the new blood was accompanied not only by improvement in the anemia but in the cure of the infection, in some cases in a manner similar to a crisis. Nine patients recovered. One patient suffering from celiac disease with secondary infection, improved considerably for a time but finally died of purulent meningitis.

Blood transfusion is advised as being helpful in the treatment of anemic infants and young children, especially when the anemia is complicated by pneumonia. It is not being urged as treatment for pneumonia but as a cure for the anemia, as a result of which the pulmonary infection is apparently checked. Heretofore pneumonia has been considered a contraindication to blood transfusion, but in the author's experience the opposite is the case, for when a child with severe anemia is stricken with a pulmonary infection, the chances for recovery seem to be greatly increased by the use of transfusion.

There is apparently a definite rationale for the employment of blood transfusion, during the course of certain cases of anemia with complicating pneumonia. The pneumonia in such cases should be considered not as a contraindication to the use of transfusion, as heretofore, but as a distinct indication for such treatment.

Fibrosis at the Base of the Lungs in Children.—Kenneth H. Tallerman (*Archives of Pediatrics,* March, 1925) states that an increase of fibrous tissue at the base of the lung consequent upon measles and acute pulmonary infections is far from rare in children. It appears to be secondary to an inflammatory condition in or around the alveoli and bronchioles, and probably also to pleural involvement. The condition is sometimes confused with tuberculous disease of the lung, but the rarity of this latter as a chronic illness in children, the difference in symptomatology, and the general position of the process, should sufficiently distinguish the two. The roentgenogram is of assistance and shows an increase of shadow extending from the hilus outward and down toward the diaphragm, the edge of which is likely to appear blurred. Associate changes noted in the plate are usually peribronchial thickening with some hilus gland enlargement. The definite mottling seen in fibrocaseous tuberculosis is conspicuous by its absence, and the shadow is not that seen in pneumonic consolidation. The condition may be the starting point of a bronchiectasis, the earliest evidence of which is given by the symptoms of foul sputum and offensive breath added to a picture clinically and radiologically one of fibrosis. The prognosis depends upon whether the process is arrested or whether a reinfection, a gradual extension of the fibrosis, or the supervention of a bronchiectasis should take place.

The treatment is along general and dietetic lines, aiming at improving the resistance and nutrition of the child. All sources of focal infection must receive adequate attention.

Protein Sensitivity in Infantile Eczema.—Franklin J. Corper (*American Journal of Diseases of Children,* March, 1925) finds that when one compares the results obtained in cases of true infantile eczema with those obtained in true cases of food idiosyncrasy, one is impressed by the fact that in the idiosyncrasies a positive reaction is practically always obtained to those foods causing manifestations. This may be explained on the assumption that in such cases there is an extremely low tolerance or threshold for the food giving rise to symptoms, while in eczema the infant may have a limited tolerance to single proteins or to a combination of proteins. Or it is quite within reason to suppose that eczematous infants suffer from the cumulative action of such proteins, to which there is sensitivity only in degree. That specific proteins are the sole etiologic factors in the production of eczema is yet to be proved, and most certainly the proof offered up to the present is insufficient on which to base conclusions. That, however, positive cutaneous tests are associated with infantile eczema is beyond question, but at present we must regard this relationship as a guide to diagnosis and treatment and as a possible stepping stone to the discovery of the actual etiology.

Infants with eczema show a high percentage of positive skin tests to proteins, which may or may not be included in the dietary. Elimination of the specific proteins is conducive to subsidence of symptoms in only a relatively small percentage of cases. Improvement of clinical manifestations, rather than complete recovery, may be expected in those patients who are benefited. Patients sensitive to animal proteins are more likely to respond to specific treatment than those sensitive to cereals, fruits and miscellaneous proteins. The presence of a positive cutaneous test is not a criterion to the successful treatment of infantile eczema.

The Scorbutic Diathesis.—H. L. Ratnoff (*Archives of Pediatrics,* March, 1925) states that the chief etiological factor in the production of scurvy is lack of vitamine C, but in addition to this there must be other factors working in conjunction with it, before the true clinical picture of the disease can be produced. These are: 1, age, which is six months or over; 2, constitution, some children requiring but small quantities of vitamines and therefore do not develop scurvy, even when vitamines are not given in sufficient quantity; 3, infection, the greater the number of infections which a child undergoes, the more will the tendency to develop scurvy be increased. Only when all these factors work in conjunction will scurvy be produced, and therefore it may be regarded as a chronic disease.

The actuality of a scorbutic diathesis can be demonstrated by the appearance of petechiae or the application of the capillary resistance test. When this diathesis exists, the proper stimulus, toxic or mechanical, is able to produce active scurvy, and the fact that the disease is recurrent is one of the best demonstrations of the existence of such a diathesis.

As soon as any hemorrhagic evidences appear—and the possibility of hemophilia, purpura, etc., has been excluded—orange or lemon juice, or that of tomatoes, two to four tablespoonfuls a day, should be given. If the scorbutic diathesis is only possible or suspected, all children who fail to grow or gain properly when arriving at the age of six months or over, or show a marked susceptibility to infection, should likewise receive additional feedings of vitamine C. The body of every bottle fed infant should be fortified against the possibility of developing the scorbutic diathesis by the addition of moderate quantities of this element to his food during this period. Should the premonitory symptoms escape attention and the child be permitted to develop a severe and dangerous form of the disease, large quantities of vitamine C must be at once introduced into the dietary. As there is always a possibility of a recurrence, it is best to continue the administration of vitamine C as recommended, for at least three months after there has been apparent cure. Only when the child is steadily gaining in weight and body length; is fully resistant to infection without any recurrence of scorbutic symptoms; when the appetite is good and the disposition happy and contented; then only can we feel assured that the scorbutic diathesis is fully conquered.

Bronchial Asthma and Chronic Bronchitis in Children.—Ralph H. Kuhns (*Archives of Pediatrics,* February, 1925) states that the treatment of bronchial asthma and asthmatic bronchitis depends upon the particular type of offending protein or bacteria. Another method of treatment is that of the acute attack, and the general treatment of the disease.

In treating the acute attack, mustard plasters applied to the thorax will often relieve the spasm sufficiently to reduce the respiration. Adrenalin chloride given hypodermically is also a useful drug to combat the severe dyspnea. Many physicians also give antipyrine of bromides at bedtime in the hope of avoiding or lessening the severity of the nocturnal attacks.

The general or interval treatment of these patients recommended is the following: 1. A careful history of the child's present and previous illnesses should be taken, investigating also the illnesses of parents and near relatives having any bearing on the condition. 2. A complete physical examination of the child should be made, investigating the ethmoid region of the nose and other accessory nasal sinuses. 3. Laboratory examinations as follows: blood count, urine examination and roentgenograms of the chest. 4. Protein skin tests to determine the offending protein. 5. Theatment of the ethmoid region of the nose by a rhinologist by means of infiltrating the submucous tissues of the nose and ethmoid regions with an antiseptic solution according to the method of Haseltine. 6. The administration of calcium according to the method of Pottenger, for the following reason: inasmuch as the activity of the vagus nerve, which belongs to the parasympathetic system, is antagonized by the sympathetic nerves, and inasmuch as a relative increase in the calcium ions produces the same effect as sympathetic stimulation, the administration of calcium is a rational therapeutic measure in combating asthmatic paroxysms. 7. The exposure of the body to the ultraviolet rays of a mercury vapor quartz lamp for the following reasons: Novak and Hollander in a series of patients found the calcium content of the blood serum to be low in hyperesthetic rhinitis, hay fever and asthma. They also state that there is evidence of metabolic change in the animal body brought about by solar rays in the fact that the inorganic phosphate was brought up to normal by sunlight and also carbon arc irradiation. A similar effect was had with calcium in the blood. The ultraviolet light seems to be necessary for the normal metabolism of the infant. Exposure to the mercury vapor quartz light, together with combined calcium thyroid therapy, appears to fix permanently the ionic calcium content of the blood stream. The lamp is raised about one meter from the patient and fractional body exposures are made two or three times weekly or oftener. The time of exposure, at first two minutes, is increased at each treatment by from two to three minutes, depending upon the tolerance of the individual. At each successive treatment the distance between patient and lamp is decreased by three inches. The smallest distance reached is about eighteen inches, while the longest exposure made may reach fifteen minutes, or in exceptional cases, when the tolerance of the individual is great, twenty minutes. 8. Treatment by means of autogenous vaccines containing all the organisms grown from the nose and throat cultures.

DIABETES

Renal Threshold for Glucose in Diabetes Associated with Nephritis.—Ten cases of diabetes associated with renal disease are reported by E. Wordly (*Lancet,* March 28, 1925), in all of which there was present a marked inability to concentrate urea as judged by MacLean's urea concentration test. In eight of these ten cases the renal threshold for glucose was normal in spite of the inability of the kidney to concentrate urea. In two cases the renal threshold for glucose was raised, in one case slightly, in the other to a greater extent. It would appear, therefore, that chronic nephritis of the azotemic type does not, in the majority of cases, alter the permeability of the kidney for glucose. In addition, these observations show that MacLean's urea concentration test is of greater value in estimating the function of the kidney in diabetes than an estimation of the blood urea, since the prolonged period during which many of the patients have been kept on a low diet tends to lower the blood urea. It is, of course, well known that it is possible, in cases of nephritis, by giving a diet containing very little protein, to reduce the blood urea, when previously on a full diet, it had been very high, to an almost normal figure.

Treatment of Diabetes by Raw Flesh Gland (Pancreas).—Thomas J. Hollins (*British Medical Journal,* March 14, 1925) believes that in spite of the many theoretical objections to the use of raw pancreas by the mouth in the treatment of diabetes mellitus, it seems to do all that insulin does, at the same time being free from the grave risks attendant on the use of insulin (for example, hypoglycemia). The facts collected by the author seem to point to the direction of raw pancreas being a complete substitute for insulin. It renders the urine free from sugar within twenty-four hours of the initial dose; it lowers the blood sugar, and the ketone bodies disappear from the urine. If in the course of the routine administration of raw pancreas the gland is withheld, the sugar constantly reappears in the urine.

The method usel in the administration of raw gland is as follows: The patient is first carefully dieted and kept at rest. If this fails to clear the sugar from the urine he is at once given raw gland and a diet arranged according to his weight and the type of work he has to do. The first essential is that the gland should be perfectly fresh. After keeping and heating the gland is useless. It seems probable that the internal secretion of the pancreas is a labile substance easily destroyed and rendered inert by heating and keeping. It must be given raw, and is best given finely minced. The dose recommended is one tablespoonful daily. Glands of the sheep, ox, or pig may be used. It forms quite a delicious meal, especially when taken with lettuce, and patients easily get accustomed to it and even like it.

New Method of Treating Diabetes Mellitus and Associated Disturbances of Metabolism.—Hugo Weiss (*Wiener klinische Wochenschrift,* October 30, 1924) renders a preliminary report on and recommends for further trial a remedy called "lethizit," which is a white powder soluble in water, a complex alkaline double salt of lithium and sodium, which are combined with citrate ($Li_2C_6H_7NaO_7 + 2H_2O$ in the three carboxyl groups of citric acid the hydrogen atoms are displaced by lithium and one by a sodium atom). This powder was found to be entirely harmless and is based on the principle of making every appearing form of uric acid soluble and ready for excretion and thereby eliminating also the chemical sequelæ. If diabetes mellitus is considered to be a secondary phenomenon of uric acid metabolism, an effect upon the uric acid mechanism must also have a regulating effect upon the metabolism of sugar.

A series of forty cases were studied, including only old cases that had been repeatedly treated before. In the beginning the powder is given in daily doses of two grams, dissolved in one third of a glass of water, after the noon or evening meal. After seven days the dose is increased to three grams, possibly even to four grams. The amount of carbohydrates in the food may be increased simultaneously with the increase in dose. After the disappearance of the glucose from the sugar, the treatment must not be interrupted, only the dose may be diminished until one is certain that the carbohydrate tolerance is sufficiently high. The duration of the treatment lasts an average of two to three months, sometimes a little longer. Control of the urine is absolutely necessary, because occasionally the treatment must be repeated.

The author draws the following conclusions: 1. Most of the cases of albuminate and carbohydrate metabolic disturbances may be favorably influenced by the lethizit treatment of Szirmay. The amount of the sugar excreted diminishes rapidly and sometimes disappears entirely, even in cases that could not be influenced before that by diet or by insulin treatment. 2. The patients can take carbohydrates often in large amounts and assimilate them without showing any increase of the sugar content in the urine. The difficulty of feeding these patients is done away with by the omission of a strict diet or fast days. 3. Acetone, diacetic acid and b-oxybutyric acid disappear in a very short time. 4. The body weight is increased even in severe cases as a result of the extensive utilization of the food. 5. This remedy has the great advantage that it is given by mouth and that it gives better results than former methods of treatment.

Use of Intarvin in Diabetes Mellitus.—D. Murray Lyon, W. Robson and A. C. White (*British Medical Journal,* January 31, 1925) claim that further investigations are needed before the claims on behalf of this fat can be fully substantiated. In the cases recorded by these authors no reduction, but rather an increase, in the amount of acetone in the blood followed the administration of intarvin. The rise, however, is less than when an equivalent quantity of other fat is added to the diet. The respiratory quotient did not at any time give indication of more carbohydrate than usual being burned under the influence of intarvin, as might be expected if the acid ultimately broke up to form sugar. On the other hand, the addition of intarvin to a stabilized diet always led to the excretion of small traces of sugar in the urine. The changes in the blood fat under intarvin cannot as yet be explained. When a patient's diet has been stabilized at his maximum tolerance, one hundred grams of intarvin can be added (allowing about seven hundred extra calories) without the appearance of clinical signs of acidosis. But in view of the conflicting figures obtained regarding the control of ketosis consequent upon its use, intarvin cannot be used indiscriminately to build up diets to a maintenance level without fear of ketosis.

The Possibilities of Insulin in General Practice.—Reginald Fitz (*Boston Medical and Surgical Journal,* March 19, 1925) discusses this subject at considerable length and closes with these remarks:

Insulin is a well established aid in the treatment of certain cases of diabetes. Since the majority of diabetic patients in this country depend upon their family doctor for treatment, general practitioners must know how and when to use insulin.

Diabetes tends to be a mild disease and only about one third of the cases ordinarily seen need insulin. Undernourished diabetics, young diabetics, diabetics with a surgical complication and diabetics with acidosis or an acute infection usually need insulin, while elderly and obese diabetics do not.

Methods have been developed for simplifying the treatment of diabetes. At present there is a tendency for too many diabetics to be sent to hospitals for education and treatment. Patients can now learn readily how to calculate diets, how to measure and prepare them, how to test the urine for sugar and how to administer insulin. Insulin affords a rapid method for desugarization. Selected cases can be intensively treated with insulin, so that a satisfactory therapeutic result can be accomplished in a few hours instead of in a few days or weeks. Attempts should be made to shorten the period of hospital treatment for diabetics because of the expense of treatment in the first place and so that the available hospital beds for diabetics can be used by sick and needy patients who require bed and special nursing care.

Coma is the chief diabetic emergency which the general practitioner is called upon to treat. Coma tends to occur in young people more frequently than in old people. It may begin acutely without known antecedent symptoms of diabetes; it can usually be prevented by properly trained diabetics. The physical signs of coma are important in the early diagnosis and there must be manifestations of acidosis and glycosuria to justify the diagnosis. Coma must be treated as soon as possible after the diagnosis is established for the longer the duration of coma before treatment is instituted the worse the prognosis. Coma cases with infection, those in shock, and those with very high blood sugar concentrations have a poorer outlook than those without demonstrable infection with a well sustained blood pressure and without tremendous hyperglycemia. The treatment of coma is simple and satisfactory. Large doses of insulin, plenty of fluid and good nursing care are the essentials.

Severe Acidosis of Diabetes.—John H. Musser, Jr. (*Medical Clinics of North America,* November, 1924) discusses the proper management and handling of a case of threatening or developed coma. Patients who are unable to afford proper nursing care at home should be removed to the hospital at once where they should be put in bed, kept warm, and kept as quiet as possible. The bowels should be kept moving daily by the use of enemas. Cathartics may cause diarrhea which is likely to increase the acidosis. If the pulse is weak, the patient has considerable shock, he should be given digitalis and caffein. Liquids should be forced—1,000 c.c. every six hours at least, preferably in the form of hot tea, coffee, or broth.

If the patient is completely unconscious usually the preliminary dose of insulin will bring him out of his unconsciousness. He should be given twenty grams of glucose by mouth, which may be given in the form of cane sugar or syrup. The first dose of insulin should be at least fifty units. If the person is absolutely comatose the insulin should be given intravenously in a five per cent. glucose solution. In the private home it is usually enough to give five per cent. solution of glucose by bowel and the insulin hypodermically. Depending on the response of the patient the glucose should be forced or diminished, and the same may be said of the insulin. The wise rule is to continue giving the glucose fifteen grams hourly and the insulin ten to forty units every third hour unless the sugar disappears from the urine. When consciousness returns, the patient should be started on a diet high in carbohydrates in order to overcome the ketosis. As soon as the urine becomes free of diacetic acid the carbohydrate is reduced and the subsequent treatment is that of any case of diabetes.

Muscular Exercise in Diabetes Mellitus.—K. S. Hetzel (*British Medical Journal,* January 17, 1925)) summarizes his findings as follows:

1. Muscular exercise in patients suffering from diabetes mellitus depletes the blood glucose provided there is an adequate supply of insulin in the tissues.
2. The more perfect and complete tissue metabolism is demonstrated by the disappearance of ketones from the urine under these conditions.
3. As the result of exercise the blood sugar tends to fall rapidly to between 0.07 and 0.10 per cent., but it does not become lowered further.
4. No hypoglycemic reactions have occurred on exercise even if the initial blood sugar was as low as 0.07 per cent.
5. Muscular exercise does not tend to cause acidosis provided there are adequate carbohydrate and insulin for its transformation.
6. Exercise in patients without sufficient insulin, endogenous or exogenous, causes no change in the concentration of glucose in the blood, but markedly increases the production of ketone bodies, with resultant acidosis and the likelihood of the supervention of a diabetic coma.
7. An hypothesis for the action of insulin is suggested, namely: Insulin is essentially associated with the metabolic processes in the muscles, but apparently it is not necessary for the transformation of glycogen to lactic acid in the contraction of muscle, but the transformation of glucose into glycogen precursors and the intrinsic metabolic processes of muscle depend on its presence.

Diabetes and Coma.—William P. Murphy (*Medical Clinics of North America,* March, 1925) draws the following conclusions from a study of five cases of diabetes and coma:

The onset of acidosis with resulting coma may be very acute and may be precipitated by an infection, by gross dietary indiscretions, or by failure to follow out the details of diabetic treatment. The carbon dioxide combining power of the blood is a better indicator of the degree of acidosis than is the urinary diacetic acid reaction. It is possible that other acids than the ketones may help to produce acidosis in diabetes. This fact probably explains the small amount of diacetic acid demonstrable in the urine of certain of the cases with severe acidosis. It is important to know whether or not alkali has been administered in those cases in which carbon dioxide combining power of the blood and the diacetic excretion in the urine are both high, and it is dangerous to make the diagnosis of diabetic coma in cases without a lowered alkali reserve. There is usually a relatively high red and white cell blood count in coma cases. The blood changes are probably due to the dehydration, which may be marked in acidosis.

The following are a few practical details which may be of value in managing diabetes with severe acidosis or coma:

1. Obtain a sample of urine and examine it for sugar and diacetic acid at the earliest possible moment.
2. If large amounts of sugar and of diacetic acid are present treatment for diacetic acidosis should be started immediately, regardless of the presence of complications.
3. Treatment may be started in the home. The patient should be kept warm. An enema should be given. In the early stages of coma the patient can usually be aroused enough to take small amounts of fluid by mouth. Small rectal injections are easily given. Insulin should be given subcutaneously, beginning with 10 to 20 units, depending upon the amount of sugar and diacetic acid found in the urine. The effect of insulin can be safely observed by repeated urine analyses. Blood tests are not necessary.
4. The burden of the diagnosis and treatment of diabetic coma rests with the physician who first sees the case. All doctors should carry an ampule of insulin as part of their emergency outfit.

Diabetes.—At the Canadian Congress of French Speaking Physicians A. Rousseau (*Revue Française d'Endocrinologie,* March-April, 1925) presented an extensive study of diabetes in the light of the discoveries of recent years. He emphasized the rôle of the liver and the pancreas in producing the disturbances of glycogenic and glycolytic function incident to diabetes. In his view simple diabetes is due most of all to an alteration of hepatic glycogenesis with secondary pancreatic effects, while severe diabetes is the consequence of a primary alteration in the pancreatic internal secretion. In addition to heredity, superalimentation, and sedentary habits as the common causes of diabetes, an important place must be assigned to infection and to toxic infection of gastrointestinal origin. The aim of all treatment of diabetes is to diminish hyperglycemia and glycosuria, in view of the existing degree of carbohydrate tolerance, without provoking acetonuria. Diet and rest are the basis of treatment. Insulin is indicated chiefly when a balanced ration is impossible, but is always an emergency resort.

Studies of the Action of Insulin on Different Carbohydrates.—Insulin, says J. Enselme (*Thèse de Lyon,* 1924), appears to be the prime factor in regulating carbohydrate metabolism. He finds that *in vitro* its effect on different carbohydrate solutions, whether alone or in presence of blood serum, is completely negative. In contact with various normal blood ferments it increases the action of maltolytic ferment, affects glycolytic ferment variously, and remains wholly inactive in relation to ferments destructive of dextrine and glycogen. The addition to these different sugars and solutions of organic tissues such as liver and lung or of phosphorus compounds in no way modifies the effect of insulin upon them. It seems, therefore, that the cause of insulin hypoglycemia does not reside in the blood.

Treatment of Diabetic Xanthoma with Insulin.—A. Chauffard, P. Brodin, and R. Yovanovitch report (*Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris,* November 14, 1924) their observations on a man of fifty years, a diabetic affected for more than a year by nodular xanthoma of the wrists, knees, and ankles. He exhibited blood hypercholesterinemia and increase of neutral fats in the blood. After a month and a half of treatment with insulin the xanthoma almost wholly disappeared and at the same time a considerable modification took place in the blood chemistry. The insulin acted not only on the carbohydrate metabolism, but quite as much on the fat metabolism.

Insulin Deprived of Toxicity.—By a special method C. Piazza (*Revue Française d'Endocrinologie,* March-April, 1925) has obtained an active insulin devoid of toxicity. The toxic phenomena following the use of Banting's insulin are not due to hypoglycemia, but to the toxicity of the insulin itself. Piazza's insulin is thermostabile, can be sterilized, and is administered by weight.

Effect of Insulin on Pneumogastric Excitation.—Garrelon and Santenoise (*Comptes Rendus de la Société de Biologie,* 1924) found insulin to be one of the most powerful stimulants of the vagus, increasing the oculocardiac reflex and slowing cardiac action. Vagus hypertonia appears after a variable period of time, depending on the strength of the preparation and the amount injected. It is delayed by the presence of albumen. This hypertonia is long continued, lasting three or four hours, sometimes more, and corresponding closely with the modifications of glycemia.

Insulin.—A. Leger calls attention (*Revue Française d'Endocrinologie,* March-April, 1925) to the fact that insulin does not merely affect carbohydrate metabolism, but also that of fats and albumens. The only contraindications to its use are renal diabetes and simple diabetes where dieting proves effective. In diabetes the indications are, first, simple cases where the coefficient of carbohydrate assimilation is low; second, severe or tuberculous diabetes and especially infantile diabetes, and third, diabetes complicated by infection, gangrene, tuberculosis not too far advanced, and where surgical intervention is demanded. Apart from diabetes, insulin is indicated for acidosis from pregnancy, cyclic vomiting in infants, and similar causes.

Insulin: Its Intradermal Injection.—Ernst F. Müller and H. B. Corbitt (*Journal of Laboratory and Clinical Medicine,* June, 1925) found in rabbits that intravenous injections of insulin are the least effective, subcutaneous injections are considerably more so, and the intradermal mode of administration is by far the most effective means of giving it. The degree and the period of effectiveness do not depend upon the rapidity of resorption, but upon a hitherto unknown factor, probably related to the action of the involuntary nervous system. This property seems to be inherent in the skin rather than in the subcutaneous tissues or in the body fluids.

Glycolytic Effect of Amygdalin.—Livierato (*Revue Francaise d'Endocrinologie,* March-April, 1925) considers tonsillar extract superior to insulin in the treatment of diabetes. Glycemia diminishes rapidly and acetone disappears at the same time that the toxic phenomena are relieved. All the complications of diabetes are successfully overcome by this method.

SYPHILIS

Treatment of Syphilis with Bismuth.—J. L. Grund (*Boston Medical and Surgical Journal,* February 19, 1925) says that the superiority of bismuth over mercury, both in spirocheticidal and serological aspects, are plainly evident. Milian in this regard places it midway between the arsenicals and mercury and compares the theraputic activity of arsphenamine, bismuth, and mercury in the following manner: the therapeutic activity of arsphenamine is represented by the figure 10, that of bismuth by 7 and that of mercury by the figure 4. With this in view, bismuth must be seriously considered in the future as an adjuvant to the arsenicals in the routine treatment of the average case of syphilis. When conservatively administered, its untoward effects are not greater and of no graver moment than those obtained with mercury.

In cases of jaundice and of arsphenamine dermatitis due to arsenic, in which potent antisyphilitic measures are desired, and in which it is necessary to obviate the reappearance of these untoward states, bismuth may be used with satisfactory results both clinically and serologically. Cases with arsphenamine intolerance as manifested by nitritoid crises, are equally favorably influenced. In addition, in cases in which there is evident a strain of Spirochaeta pallida with its ensuing manifestations, resistant to either arsenic or mercury or to both, bismuth has been of definite potency in controlling all signs and symptoms of the disease.

Although the obtaining of a negative Wassermann should not be considered the solely desired end result in every case of syphilis, it must be admitted that a negative reaction is a source of comfort to both physician and patient, and presents a basis for a more rational and definite plan of future treatment. In obtaining a definite change in the Wassermann reaction in thirty-four per cent. of a total of seventy-nine cases at the end of a single course of bismuth with the probability of a somewhat larger proportion occurring after further treatment, it is easily seen of what distinct value bismuth is in this connection. It has proved far superior to sulpharsphenamine in cases of this nature.

It is suggested that bismuth be given a trial in cases of syphilitic cardiovascular disease when the latter cannot or should not receive arsphenamine or any of its allied products.

It is generally held that the baneful action of irregular and lapsing treatment in syphilis, increases the incidence of visceral and neurosyphilis. A small number of arsphenamine injections administered during a comparatively long period of time, and then followed by the cessation of treatment, places the patient in a state similar to that obtaining in the early incubation period of syphilis when spirochaetes abound and the host exhibits no immunologic response. Ehrlich's explanation of this phenomenon is as follows: "In these patients, the greater number of spirochetes are destroyed by the spirocheticidal action of arsphenamine. So rapidly is this accomplished that the usual tissue immunity which develops as a result of contact between parasite and host is lacking; as a result, a small focus of spirochetes in the tissue of the central nervous system, which may escape the action of salvarsan, develops in the susceptible host with great rapidity and severity." Bismuth, because of its lower spirocheticidal value and slower rate of absorption and elimination, should not when introduced lower the immunological response of the patient to the degree in which arsphenamine tends to. With this explanation at hand, it is thought that the use of bismuth in cases of this character, may be followed by a lower incidence of visceral and neurosyphilis.

From the point of view of expectancy rather than from any proof definitely presented, it is suggested that bismuth be used as an adjunct to the drugs accepted at present as of definite value in the treatment of syphilis of the nervous system.

In the final analysis, it is hoped that the impression is not conveyed that bismuth is a cureall but that it should be resorted to when syphilis cannot be controlled by methods at present in vogue. Its application should be limited to those cases resistant to the arsenicals, or in which it is inadvisable to introduce the latter. In addition its use as an adjunct to the arsphenamines in all types of syphilis in contradistinction to the long established use of mercury in this connection, is presented as a subject to be seriously considered and given further trial.

Bismuth in Syphilis.—F. Green (*Canadian Medical Association Journal,* February, 1925) presents the records of a few cases out of a large series which, he asserts, show that bismuth has in primary syphilis a slow spirocheticidal action as compared with salvarsan, the spirochetes being found in the lesion after the third and fourth injections. In primary and secondary syphilis it has a slower action than arsenic in changing the positivity of the Wassermann reaction, and on account of this slow action it ought not to be used in the abortive treatment of syphilis. In cases of latent syphilis already treated extensivly with arsenic and mercury and are Wassermann fast, bismuth seems to have a great advantage over the other specifics in changing the Wassermann reaction from positive to negative in a short time, although it must be admitted that mercuroarsenobismuth Wassermann fast cases also exist. Bismuth in conjunction with salvarsan seems to be more effective than mercury plus salvarsan in changing the Wassermann reaction from positive to negative, and bismuth seems to be of great help in relieving the pain of tabetics.

Bismuth Salicylate in the Treatment of Syphilis.—S. R. McKelvey, Geo. K. Dunklee, and Nolie Mumey (*Colorado Medicine,* June, 1925) have arrived at the following conclusions: 1. Bismuth is an adjunct in the treatment of syphilis, and is above mercury but below salvarsan in its action. 2. It is better tolerated than mercury. 3. It is less painful than mercury, but causes some discomfort from injection. 4. It is efficient in the socalled Wassermann fast cases. 5. It will clear up primary and secondary manifestations more rapidly than mercury, more slowly than salvarsan. 6. It can be used in patients with marked renal involvement.

Conceptional Syphilis and the Wassermann Reaction.—L. Bory (*Presse médicale,* May 9, 1925) refers to a number of cases of occult syphilis in women, manifested solely in conceptional disturbances, and apparently associated with an unusual mode of inoculation whereby the treponema passes directly into the blood or the peritoneum—both media unfavorable to its development. It is a question in such cases whether infection has actually occurred, and whether the contrast between the perfect health of the mother and obvious syphilis of the fetus is not due to a conservation or culture of the germ coming in from the exterior, e.g., with the semen, in the ovarian or parovarian region, with resulting ability to infect the product of conception, which forms an ideal culture medium for the spirochetes. The frequency of completely negative Wasermann reactions in the blood of the mother while the reaction is positive in the child constitutes an argument in favor of the conception of "germ carriers" which is no harder to accept as applying to syphilis than to tuberculosis, cerebrospinal meningitis, diphtheria or many other disorders.

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Medicolegal Notes.

RESPONSIBILITY FOR INFECTION OCCURRING AFTER OPERATION

In an action against a physician for cutting the plaintiff's arm for the purpose of drawing plaintiff's blood for transfusion, contrary to an alleged agreement whereby the plaintiff consented to the operation only upon the condition that the blood would be drawn with a needle and her arm would not be cut, the Georgia Court of Appeals held, Jeter v. Davis, 127 S. E. 898, that the trial court did not err in instructing the jury in effect, with reference to an infection which subsequently developed, that the defendant would not be responsible for anything occurring after the plaintiff left the physician's charge, unless it resulted directly and proximately from the defendant's act; the instructions being warranted by the pleading and the evidence.

STATUTORY EXAMINATION OF PLAINTIFF IN PERSONAL INJURY ACTION HELD NOT TO INCLUDE EXCISION OR X RAYS

Section 19 of the New Jersey Evidence Act provides that in personal injury actions the court may before trial order "an examination of the person injured as to the injury complained of by a competent physician or physicians, surgeon or surgeons, in order to qualify the person or persons making such examination to testify in the said cause as to the nature, extent and probable duration of the injury complained of." The New Jersey Supreme Court holds, Andrus v. Fomfara, 127 Atl. 788, that the statute is not broad enough to give the court power to oblige a plaintiff to submit to an excision of cells from a growth in order to furnish testimony for the defendant as to the nature of the plaintiff's ailment, the plaintiff having alleged that the growth was malignant and cancerous. The court was also of opinion that it should not direct that x ray photographs be taken for the defendant.

TESTIMONY INSUFFICIENT TO SHOW MALPRACTICE

In an action for malpractice in permitting a pad to remain in plaintiff's body after a major abdominal operation, it appeared that the defendant surgeon did not carry the operation through to completion, others, for whose actions he would not be responsible, being involved. The Pennsylvania Supreme Court held, De Rose v. Hirst, 127 Atl. 776, that since the only testimony produced showed that the plaintiff's injuries were caused by an act either of defendant or of some one else not connected with him, the defendant not having undertaken by contract or otherwise to see that the *entire* operation was performed with due care, the plaintiff's case was not proved with that degree of certainty which the law requires to warrant its submission to the jury. Nonsuit was therefore properly entered.

TESTIMONY NECESSARY TO MAKE X RAY PLATES ADMISSIBLE IN EVIDENCE

To justify the admission in evidence of x ray plates, the New Jersey Supreme Court holds, Joy v. Flax, 127 Atl. 596, there must be testimony of the trustworthiness of the process and instruments used to such an extent as to apprise the court that the method used to obtain the plates was one generally recognized as trustworthy. There must also be testimony that the plates depict the condition of the body, or the part of the body, of the person purporting to be the subject of the plates.

The court said: "The general principles governing the admission in evidence of x ray plates are the same as those which govern the admission in evidence of photographs. By the use of x rays a representation of things not discoverable or observable by the use of ordinary eyesight is obtained. Whether or not the x ray plate truly depicts what is not discernible to the eye depends in a large measure upon the correctness of the process and instruments used in making the plates.

CHARITABLE HOSPITAL NOT LIABLE FOR INJURY TO PAY PATIENT BY NEGLIGENCE OF NURSE

The New Jersey Court of Errors and Appeals, D'Amato v. Orange Memorial Hospital, 127 Atl. 340, is of opinion that public policy requires that a charitable institution maintaining a hospital be held not liable for injuries resulting to patients through the negligence or carelessness of its physicians and nurses, even if the injured person were a pay patient; payment for board, medical services and nursing in such case going to the general fund to maintain the charity. The injury in this case was received while a nurse was attempting to remove the patient, who was recovering from an operation, from a wheel chair to bed, the patient falling from the chair. The court was not required in this decision to go so far as to hold that a charitable corporation maintaining a hospital might not be liable to a pationt if carelessness were shown in the selection of the agent responsible for the injury, as that question was not raised in the case.

LICENSING ON LICENSE FROM ANOTHER STATE

The New Jersey Supreme Court holds, Wooding v. MacAlister, 127 Atl., 38, that the state board of medical examiners has discretion as to granting a license to practice in the state without further examination to one proving to its satisfaction that he has been examined and licensed by the board of some other state, so that mandamus will not lie to compel the granting of the license.

ADMISSIBILITY OF DEPOSITIONS OF PHYSICIAN TAKEN IN ANOTHER STATE

The Pennsylvania Supreme Court holds, John v. Reick-McJunkin Dairy Co., 127 Atl., 143, that depositions of a physician who attended the plaintiff in a personal injury case, taken in another state, the physician's testimony including facts given him by the patient, constituting a history of the latter's condition, upon which he based his opinion as to plaintiff's physical ailment and prescribed the treatment to be given, were properly received in evidence.

CHARITABLE HOSPITAL'S DUTY IN SELECTION OF PHYSICIANS

The West Virginia Supreme Court of Appeals holds, Roberts v. Ohio Valley General Hospital, 127 S. E. 318, that it is incumbent on a charitable hospital to use reasonable care in the selection and retention of its physicians, nurses and attendants; and for failure to do so it is liable for injuries received by its patients due to their incompetency.

FINDING OF DEAD BODY SHOWING SIGNS OF STRANGULATION SUFFICIENT TO SHOW CRIMINAL AGENCY

In a homicide case, the defendant being charged with conspiracy to murder her infant child, the evidence showed that the condition of the body of the child, when found, indicated that it had been killed by strangulation. The West Virginia Supreme Court of Appeals held, State v. Toney, 127 S. E., 35, that criminal agency is sufficiently shown where a dead body is found with injuries apparently sufficient to cause death, under circumstances which exclude inference of accident or suicide. In a case of this kind, whether the child was born alive is a question of fact to be determined from the circumstances. Direct evidence is not essential to prove the corpus delicti in any case. It may be proved as any other fact may be proved which is essential to establish the guilt of the accused, namely, by circumstantial evidence.

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The Recognition and Treatment of Neurocirculatory Asthenia in Civil Life*

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Whenever a large number of persons are taken out of their normal environment and are gathered together under conditions that are unusual and frequently uncongenial, and then are subjected to unaccustomed physical and mental strain, various diseased conditions are apt to develop which would have remained latent and gone unrecognized, in the majority of instances, had these persons been allowed to follow the ordinary course of their lives. It was such conditions as this that brought into undue prominence many functional and organic diseases during the late war, when thousands of young men were mobilized in cantonments, and later on when they participated in actual warfare.

Among the conditions frequently observed among our own troops, as well as in the soldiers of other nations, was the symptom complex variously referred to as irritable heart, effort syndrome, but perhaps more accurately designated neurocirculatory asthenia. This syndrome, it will be recalled, was characterized by symptoms referable to the cardiovascular system, notably tachycardia, palpitation, precordial pain, excessive sweating, cold, mottled hands and feet, and various cutaneous vasomotor phenomena. Of equal prominence were the nervous manifestations such as anxiety, depression, sleeplessness, and marked weakness and excessive fatigability, in some instances associated with vertigo, faintness, dyspnea, and gastrointestinal symptoms. The peculiarity of the syndrome was the insignificant objective evidences of disease as contrasted with the obtrusive subjective manifestations, which soon led to the recognition of the fact that the syndrome was primarily a neurosis in which the asthenia cardiovascular phenomena, which were so outstanding, were the result of functional disturbances of the nervous system rather than evidences of organic visceral disease. The neurocirculatory asthenia syndrome was in no sense peculiar to the late war. It had been recognized by the British in the Crimea, and was accurately described by DaCosta after the Civil War (1). Indeed, his now classical paper furnishes a description of the condition which has not been improved upon by recent writers.

*Read before the American Climatological and Clinical Association at Washington, D. C., May 5, 1925.

Undoubtedly neurocirculatory asthenia still exists, and there can be no question that the condition has always existed among the civilian population. However, until the frequency and clinical features of the condition were emphasized by our recent military experiences, the true nature of the syndrome and its significance were not generally recognized by the medical profession.

During and shortly after the war, medical literature abounded in articles dealing with the various phases of neurocirculatory asthenia. A survey of the literature for the last three years, however, yields scarcely a dozen references to the condition. This suggests that we are as prone to forget some of the medical lessons of the war as we are the economic, the sociological and the military. Because of this and from a desire to reemphasize the importance of neurocirculatory asthenia, as it is encountered in civil practice, this study has been undertaken.

CLASSIFICATION

Neurocirculatory asthenia, or effort syndrome, as it is commonly called by the British, who have also devoted much study to the condition, can hardly be looked upon as a clinical entity, but must be regarded rather as a group of symptoms and signs that may develop under various conditions. This was emphasized by Thomas Lewis, who divides individuals exhibiting this syndrome into six classes. The first, and by far the largest, class comprises those persons who exhibit inherent nervous instability and constitutional weakness. This group includes those who are imperfectly developed or underdeveloped; those whose family histories are bad from a nervous or emotional viewpoint, as well as those who during early life were physically or mentally below par. It was to this group that the majority of the recruits who showed evidences of neurocirculatory asthenia, while still safely in a training camp, belonged. This class also furnishes the greatest number of circulatory asthenics encountered in civil practice.

The second group included those in whom the syndrome develops as the result of fatigue, induced by hard work, lack of rest, insufficient food and exposure. This class furnishes the greatest number of those in whom neurocirculatory asthenia de-

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veloped at the front. Although exhaustion is undoubtedly a factor in some of the cases encountered in civil practice, it is obviously less frequently the cause than was the case in the army.

In the third group, the symptoms come on after some acute infection such as pneumonia, influenza, acute articular rheumatism, gastroenteritis, tonsillitis, and similar conditions.

The fourth group comprises those persons who are suffering from some unrecognized focus of chronic infection or from incipient pulmonary tuberculosis. Our steadily increasing knowledge of focal infection indicates that in civil life an increasing number of cases come under this head.

Lewis describes a fifth group that was of great importance in the army, namely, those in whom neurocirculatory asthenia developed as the result of gas poisoning. This factor is, of course, negligible as a cause of the condition in civil life.

A sixth and by far the smallest group is made up of persons who are suffering from incipient, but unrecognizable, heart disease.

ETIOLOGICAL FACTORS

Although this classification of Thomas Lewis was made after his study of the condition as it appeared in soldiers, the etiological factors that he emphasizes, with the exception of gas poisoning, are equally applicable to cases that are met with in civilian life. Regardless of all factors that may underlie the condition, the experience of all observers is in accord that there is one fundamental factor common to all cases of neurocirculatory asthenia, namely, nervous and emotional instability which brings about, or is associated with, hyperexcitability or lack of inhibition of the sympathetic nervous system. It seems now generally agreed, that it is this portion of the nervous mechanism that is chiefly at fault and is responsible for the symptoms that are present in neurocirculatory asthenia. This view is substantiated by the work of Cotton, Rapport and Lewis (2). They believe that there exists hyperirritability of the accelerator fibres of the reflex arc. According to Cotton, Slade and Lewis (3), there is also probably present hyperexcitability of the vasomotor mechanism. Neuhof (4) believes that the cardiac and vasomotor symptoms so conspicuous in neurocirculatory asthenia, are due fundamentally to sympathetic hyperexcitation unopposed or insufficiently opposed, by the inhibitory apparatus.

Because the evidences of sympathetic stimulation found in neurocirculatory asthenia resemble in some respects the symptoms of mild hyperthyroidism, a number of observers have looked upon thyroid overactivity as the cause of neurocirculatory asthenia. Harlow Brooks is inclined to this view (5). In a more recent publication (6) he states that he believes that this syndrome stands between exophthalmic goitre and status lymphaticus from a general and symptomatic viewpoint. The weight of evidence, however, seems to refute the statement that the thyroid is a fundamental factor in the production of neurocirculatory asthenia. Addis and Kerr (7) found that there was no relationship between this syndrome and thyroid enlargement. Only four per cent. of the cases of irritable heart studied by Thomas Lewis (8) exhibited probable enlargement of the thyroid gland. Peabody (9) carried out the Goetsch test in a series of sixty-five cases of neurocirculatory asthenia and reported positive reactions in sixty per cent. of this series. Boas (10), however, obtained a positive reaction in only 28.6 per cent. of his cases. Since it is open to question whether the Goetsch test is a reliable index of latent hyperthyroidism, no great significance can be attached to these findings. On the whole, it seems justifiable to conclude that the syndrome, which we designate as neurocirculatory asthenia, is fundamentally a disturbance of the sympathetic system, brought about in those who have congenitally or acquired unstable nervous symptoms, by emotional stress, physical fatigue or infections, either alone or in combination.

The manifestations of neurocirculatory asthenia as it was observed in the army have been described frequently. In order to ascertain whether the manifestations of the syndrome as it is encountered in civil practice differ materially from those met with under military conditions, a series of cases observed in practice during the past few years have been analyzed. As was to be expected, even among the civilian population, this syndrome is overwhelmingly more common in men than in women. In the present series for every eighteen cases that occurred in men, only one case was observed in women. The condition is unquestionably more common in early life. In this series it was never observed after the age of thirty-five. The earliest age at which it was noted was at nineteen. The majority of cases occurred during the third decade.

Neurocirculatory asthenia is observed much more often among those who lead sheltered, sedentary lives and are engaged in the more intellectual occupations, than in those whose labors are largely physical, and who lead active outdoor existences. In view of this it is not surprising that in the series studied, the syndrome was observed almost exclusively in students, clerks, physicians, engineers and lawyers. Only two of those affected led active outdoor lives. One was a railroad brakeman, the other a huckster. Worry, overwork, or overstudy, are noted as the exciting etiological factors in the majority of cases. In twelve and one half per cent. of the series local infections probably played an important rôle.

SYMPTOMS

The most prominent and frequent symptoms of neurocirculatory asthenia are referable to the cardiovascular apparatus. Tachycardia is one of the most consistent findings. This was particularly true as the condition was observed in soldiers, in whom frequently the tachycardia was excessive. As a rule the tachycardia quieted down under rest and during sleep, but it recurred readily with the slightest physical or emotional disturbance. In the civilian cases under consideration a persistent tachycardia of moderate degree was noted in fifty per cent., the pulse rate varying from 100 to 130. The remaining half of the cases showed a pulse rate entirely normal during rest, but a tachycardia of moderate severity supervened upon exertion. Palpitation, the sensation of being conscious of the heart beat, was present in seventy-five per cent. of this group.

Vasomotor phenomena, such as flushes, cold clammy hands and feet, axillary sweating, blue mottling of the skin of the extremities, flushing

alternating with pallor of various skin areas, all recognized as common manifestations of this syndrome, occurred in one half of this series. Precordial pain and discomfort, varying from a mild persistent aching on the left side of the chest, to short acute stabbing pain through the region of the heart, occurred in about one third of the group. The severe, acute anginalike pains, so frequently complained of in the army by those affected with this condition, was not observed in these civilian cases. Faintness, amounting at times to actual syncope, brought on by sudden exertion or emotion, occurred in twenty per cent. of this series. Attacks of dizziness, however, were only noticed in ten per cent.

It would seem, therefore, that practically the same group of vascular symptoms occurred in the civilian cases as was met with in the army. However, it should be noted that the violent palpitation, severe precordial pain and the high rate of tachycardia so frequently complained of by soldiers, did not occur with anything like the same degree of severity in the civilian cases under consideration. A study of these cases leaves one with the impression that as Neuhof (*loc cit*) has already pointed out, the true vasomotor symptoms are more conspicuous in the civil practice than they were in the military.

Dyspnea, particularly marked after slight exertion and under emotional strain, is another well recognized symptom of neurocirculatory asthenia; fifty per cent. of the cases which have been seen in practice presented this symptom. In most cases, the dyspnea entirely disappeared under rest but had a tendency to recur with annoying severity, especially upon any excitement.

As has already been mentioned, individuals suffering from this syndrome are, as a rule, highly emotional and neurotic. In the present series, many of them were highly excitable, exhibiting anxiety over their physical condition and showing a tendency to introspection. Sleeplessness was complained of by twenty-five per cent. In no case, however, did it occur as the distressing insomnia which was so frequently encountered among soldiers. Physical weakness, or perhaps better, extreme fatigability, which was such an outstanding symptom in the military cases, occurs in almost equal frequency among civilians, and it was found in three quarters of this group.

Some cases of neurocirculatory asthenia exhibit gastrointestinal symptoms, which were decidedly prominent. Frequently the tachycardia observed by the patient is ascribed by him to gastric discomfort and distention. Among the civilians studied there were many who complained of a varied assortment of gastrointestinal symptoms including attacks of sudden diarrhea.

In contrast to the subjective symptoms that are so obtrusive in this syndrome, physical examination yields comparatively meagre results. The drawn, anxious, haggard expression, frequently referred to in descriptions of this condition, as seen in soldiers, was not observed in civil practice. The general development of the patients in this series was, on the whole, fairly good. In the majority of cases, however, the thorax had a tendency to be elongated with a poor anteroposterior diameter.

There is unanimity of opinion that in neurocirculatory asthenia, a low blood pressure is the rule. The present group was no exception. The highest blood pressure noted was a systolic blood pressure of 126. In the majority of cases, the systolic blood pressure varied between 100 and 110, the diastolic between 60 and 70.

HEART IN NEUROCIRCULATORY ASTHENIA

In view of the prominent subjective symptoms referred to the heart, physical examination of this region in neurocirculatory asthenia has always been of much interest. In this civilian group there was no instance in which there existed any evidence of enlargement of the heart. It has been generally recognized that it is rare to find an enlarged heart in effort syndrome. Bertnard (11) carried out a series of teleoröntgen estimations of heart size in cases of effort syndrome. He came to the conclusion that in the cases in which symptoms persisted for a long period of time, there was a tendency for the hearts to be smaller than normal. He also found that the long, narrow, dropped heart was not the predominant type found.

Our observation that the heart was not enlarged is in accord with Smith's studies. In twenty per cent. of this series the apex beat was forcible. It resembled in quality the apex beat in mitral stenosis. In no instances was a thrill observed. Systolic apical murmurs that were not transmitted were heard in ten per cent. of the cases. Although the heart sounds were clear in most cases, frequently the first sound at the apex was of a distinctly snapping quality. This snapping sound, heard in some cases of neurocirculatory asthenia, has caused the condition at times to be confused with mitral stenosis. In thirty-three and one third per cent. of this series, arrhythmia, usually of the sinus variety, was noted. In four instances definite extrasystoles occurred. There is, therefore, nothing in the physical signs and symptoms of neurocirculatory asthenia, as seen in civil practice, that in any way distinguishes these cases from those observed in the army. There is, however, a certain quantitative difference, because the asthenia and the cardiovascular and respiratory symptoms also are much less severe and prolonged in the majority of civilians than they were in soldiers.

DIAGNOSIS

The diagnosis of neurocirculatory asthenia at times presents some difficulty. It is likely to be confused with organic heart disease, incipient pulmonary tuberculosis, and mild and atypical hyperthyroidism. The organic cardiac conditions, from which neurocirculatory asthenia must be differentiated, is mitral stenosis. As has already been noted, the tapping quality of the apex beat and the snapping first sound have frequently led to the diagnosis of mitral stenosis. It was because of this confusion that some cardiovascular boards of the army finally demanded that the diagnosis of mitral stenosis be confined to those cases which showed, in addition to the snapping first sound, the well known concomitant physical signs of that valvular lesion. Inasmuch as the classical physical signs of mitral stenosis can usually be elicited by examining a patient's heart in different positions and after varying amounts of exercise, the separation of the two conditions, as a rule, should offer little difficulty.

Added diagnostic difficulty arises in a group of cases not infrequently encountered, especially in civil life, in which to a preexisting but well compensated valvular cardiac lesion the manifestations of neurocirculatory asthenia are added. These latter symptoms have nothing to do with organic cardiac disease and are the result of an entirely independent concomitant disturbance of the patient's sympathetic nervous system. In such cases, when the valvular lesion is allowed to obscure the picture, the treatment directed to the heart alone is consciously inefficient.

In civil practice, at least, there is no question that many cases of neurocirculatory asthenia have been looked upon as early pulmonary tuberculosis. It is obviously perfectly possible for tuberculosis to exist in a patient suffering from effort syndrome, or vice versa. On the other hand, a number of studies have been made that indicate that there is no relationship between the two conditions. King (12) made a careful study of a large group of men with effort syndrome, with reference to the existence in these cases of pulmonary tuberculosis. He concluded that no evidence had been found that there existed more than an accidental relationship between the two conditions. Bond (13) has carefully reviewed a series of five hundred cases in an effort to ascertain the relationship of neurocirculatory asthenia to the development of tuberculosis. Out of these five hundred soldiers who had been discharged in 1919 with a diagnosis of neurocirculatory asthenia, tuberculosis developed subsequently in 3.4 per cent. He concluded from this that in neurocirculatory asthenia the occurrence of tuberculosis was not unduly common. The weakness and the tachycardia which occur in this syndrome are the chief features which might lead to confusion with tuberculosis. On the other hand, the afebrile course of neurocirculatory asthenia, the infrequency of the cough, and the absence of positive physical signs in the chest, serve to avoid this confusion.

The greatest difficulty is probably encountered in differentiating between atypical hyperthyroid cases and neurocirculatory asthenia. There is an undeniable dissimilarity in some of the symptoms, since in both conditions the sympathetic system is at fault. The confusion is rendered greater when a neurocirculatory asthenic has an enlargement of the thyroid gland. The fact, however, that in neurocirculatory asthenia the tachycardia disappears under rest and during sleep, which is not the case in true hyperthyroidism; that if a tremor is present in the former condition, it is a coarse tremor, not the fine tremor noted in thyroid overactivity, taken in conjunction with the increased basal metabolic rate in thyroid disturbances, and the frequent occurrence of some degree of exophthalmus, are helpful points in differentiation.

TREATMENT

The proper management of cases of neurocirculatory asthenia is by no means easy, and is one which is likely to task both the ingenuity and the patience of the physician. The problem involved is economic and sociological as well as medical. The reason that many persons exhibit neurocirculatory asthenia is because they are attempting to lead lives to which they are constitutionally unsuited. This was undoubtedly true in the army, where men developed neurocirculatory asthenia because they were put to work at laborious occupations under abnormal mental stress. These same persons would probably have gone through their entire lives without exhibiting any such symptoms had they been allowed to follow their normal work for which they were both mentally and physically fitted. A similiar situation exists too often in civil life, where untold numbers are constantly breaking down physically and nervously under the strain and fatigue of work for which they are entirely unfit. It is noteworthy that these same persons may and often do, obtain signal success when given an opportunity to work under favorable and congenial conditions.

When confronted with a case of neurocirculatory asthenia, one should first institute a painstaking investigation into the patient's work and habits of life, with a view to readjusting them ultimately, so that the patient may undertake the work for which he is best adapted, both physically and mentally.

In most well marked cases of neurocirculatory asthenia, patients are introspective and exhibit considerable anxiety as to their physical condition, not infrequently being obsessed with the idea that they are suffering from true organic heart disease that will inevitably lead to sudden death. It is essential, therefore, to gain psychological control of these patients and to encourage and reassure them by a tactful, clear and simple explanation of the nature of their illness. It is surprising to see what good results will often follow reassuring a patient that serious organic disease does not exist and that there is no danger of sudden death.

VALUE OF GRADUATED EXERCISES

In the more severe form of neurocirculatory asthenia, a short preliminary period of rest in bed may be of advantage, but in the great majority of cases the inaction and confinement are poorly borne and only lead to further introspection. The methods adopted by both the British and American Army, of giving the neurocirculatory asthenic carefully graduated exercises, is on the whole the most important and satisfactory factor in their treatment. It will be remembered that in all such cases only a very small amount of exercise can be tolerated at first. No exercise should be permitted that produces in the patient undue fatigue, precordial distress, palpitation or tachycardia.

The methods of exercise adopted by the army must of course be modified to meet the altered conditions of civilian life. In most cases of ordinary severity encountered in civil practice, they may begin with some scheme of simple setting up exercises. These can be done at first only in the morning, but later both in the morning and at night. As the patient's strength improves and the pulse rate remains more steady, these exercises may be supplemented by mild outdoor exercise in the form of walks of gradually increasing length, until as further improvement is noted, some more diverting forms of exercise may be substituted, such as golf. Under no circumstances, however, should the exercise be violent or competitive in character or entail undue sudden strain.

MASSAGE AND HYDROTHERAPY

In civil practice, properly given general massage is often valuable in those cases in which the patient is unable to take adequate active exercise. Hydrotherapy in some of its forms may be used to advantage. The simplest form is a tepid or cool bath in the morning, following the setting up exercises. Salt rubs, and the various more elaborate forms of hydrotherapy, may be used with great benefit when they are available and can be properly carried out. All who suffer from neurocirculatory asthenia should cut down their indoor work as much as possible and a maximum amount of fresh air and sunshine should be insisted upon.

MANAGEMENT OF ASSOCIATED CONDITIONS

The various associated conditions must not be neglected. For example, all foci of infection, such as teeth and tonsils, should receive attention. It is of great importance to correct any gastrointestinal conditions that exist. An adequate bowel movement should be secured daily, but there is no advantage in violent or excessive purgation.

DIET

The diet, unless some contraindication exists, should be well balanced and of high caloric value. Although various subjective gastric symptoms may exist, it is a mistake to allow these patients to attempt to live on an inadequate diet.

DRUGS

Drugs may be used in treating various symptoms as they arise, but on the whole they play a subsidiary part in the management of neurocirculatory asthenia. Digitalis has repeatedly proved useless. The condition is primarily a neurosis. It is not in any sense the result of cardiac breakdown, and therefore cardiac stimulants of all kinds should be avoided. In many cases bromides, luminal and other suitable nerve sedatives prove most efficacious. They are particularly useful when the patient is unduly apprehensive or when there is marked insomnia. As the patient improves, even these nerve sedatives may be reduced gradually, and stopped as soon as possible. To overcome the tendency to vasomotor instability, adrenal preparations have been advocated by some in the treatment of neurocirculatory asthenia, with results which are said to be beneficial. It is impossible to lay down any definite, hard and fast rules for the treatment of this or any other neurosis, that would be applicable in all cases. Every case requires careful individual study, and the regimen adopted must be nicely adjusted to the mental and physical needs of each patient.

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Prognosis in Cancer*

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Cancerous growths, as you know, are malignant tumors which grow out of themselves, that is, by an increase of their own cells. Such an autonomous growth is also observed in many benign tumors which formerly were sharply differentiated from the cancerous growths. Lately, this differentiation has become less sharp, not only because the degree of malignancy may change in the same tumor, but because benign tumors may become malignant. We experience, not rarely, that in what is now an undoubtedly malignant tumor a histological examination, made some years before, indicated a harmless character. At the present time, pathological anatomists refuse to set up definite criteria for benign and malignant neoplasms. Only the clinic, for practical reasons, still holds to the older conceptions and embraces among cancerous growths all neoplasms whenever they show a tendency to infiltrating growth.

In general, one may say that the new growths which are richer in cells are more malignant than those poor in cells; therefore, those rich in connective tissue stroma are the less malignant. This has become especially clear to us since we have observed in our radium and x ray successes that the connective tissue reaction represents a curative process on the part of the organism.

Judging from our clinical observations, we gain the impression that cancer in youthful persons takes a more malignant course than it does in old people.

A cancer, occurring past the seventieth year, frequently shows a diminished rate of growth; often it seems to remain stationary. Such a standstill, however, is not limited to advanced age, for it shows itself at the beginning of the disease. The cause for this behavior must be sought in the fact that the organism possesses protective forces with which it can bring the cancer growth to a standstill, to a regression, and sometimes even to a complete disappearance. There surely exist spontaneous cures of beginning cancers which can be explained only in

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this way. In more advanced growths, such cures are rarities, but one may occasionally observe an exceptionally slow course in cases which at autopsy are proved to be cancer.

In certain forms of breast cancer we also often see an astonishingly slow growth, occasionally for over ten years, and not exclusively in the aged either. But the opposite of this, namely, a very rapid development, also occurs.

At the time when we make a diagnosis of cancer of an internal organ it is usually in an advanced stage of the disease. The cases we see early give a better prognosis because our therapy can be applied early.

It often seems to us that the rate of growth of cancer is greater in obese than in thin patients. This should not be confused with cancer incidence in the well nourished and the undernourished. For the experience in Germany since the war has shown that the undernourished are easier prey, and cancer incidence in the latter class has tremendously increased in Germany in the last few years; whereas, in the entire world cancer of the uterus before the age of thirty-five is infrequent, at least one case each day is now seen in a large Berlin clinic, such as the Bumm Gynecological Clinic; and whereas, elsewhere cancer of the uterus below the age of thirty is a rarity, at the Bumm Clinic three to four such cases are seen each week.

In the course of the disease the intensity of tumor growth varies, especially when several tumors are present. The rate of growth is influenced by both external and internal factors. One may make the interesting observation in mouse cancer that the transplanted tumors grow feebly, or not at all when the animals are fed certain foods. Excess of calcium in the food decreases, and excess of potassium (1) increases the rate of growth of transplanted cancers in mice. Hypophysis extract accelerates and thyroid retards. And the frequency of breast cancer among butchers' wives and of intestinal cancer among vegetarians gives ground for further speculation along these lines.

In estimating the prognosis of malignant tumors each localization must be considered by itself. The prognosis in cancer of the skin is entirely different from that of cancer of the breast, of the stomach or of the uterus. Allowing for certain exceptions one could make a list ranging from only relative malignancy to the most fulminating types. The degree of malignancy is determined by the biology of the cancer cell itself and this determines its behavior toward the entire organism; or, in other words, the prognosis in cancer is dependent upon the manner in which the protective forces of the organism are functioning.

CANCER OF THE SKIN

Skin cancers are the least malignant, then follow cancer uteri, scirrhus of the breast and stomach, and cancers of the glandular organs, which are the more malignant the less accessible they are, or the more they involve vital parts of the organism.

Among the scirrhous cancers of the breast, more rarely of the stomach, are found some that grow so slowly that it is best to exclude them from any surgical intervention, for the reason that surgery often acts as a stimulus, and a latent growth will become active after surgical treatment. The skin cancer is favorable material for both radiation and operation. Since skin cancer appears almost exclusively at an advanced age it also has the benefit of the better prognosis of growths occurring during senility. The improved prognosis in cancer of the skin is due to its slow growth and slight tendency to metastization. Of course, there are exceptions. When we speak of malignancy we mean the behavior after radiation or after operation.

CANCER OF THE UTERUS

In cancer of the uterus we find that its lesser grade of malignancy is due to the fact that this form of cancer metastasizes rarely, and if at all, late in the disease. Also, as the bleeding is an early symptom, the patient soon consults her physician and so receives the benefit of early treatment. Instruction of the public regarding cancer by physicians, popular lectures, cancer weeks, magazine and newspaper propaganda is bearing good fruit.

In cancer of the uterus we have two methods of radical treatment which have become competitors. These are the advanced method of radium therapy and operation followed by prophylactic raying. The gynecologists, who have the advantage over the surgeons of using both methods, are able to show very creditable results with either form of treatment. A comparison of the results of radium treatment and of operation shows the following: If we set operative cures at an average of twenty per cent., we can safely say that this figure is much too high for the majority of gynecologists. Comparing this figure with the twenty-eight and eight tenths per cent. resulting from radium treatment it results in favor of the latter. Though the difference is not very great, one must remember that the considerable primary operative mortality is absent in radium therapy. Also that among the cases resulting in a twenty-eight and eight tenths per cent. clinical cure not less than ninety-four per cent. were inoperable cases, while the operative statistics deal with only forty to fifty per cent. of advanced cases.

In prophylactic treatment with radium after hysterectomy for uterine cancer, reported by Healy (2), of those treated without crossfire no patients are alive; of those treated with crossfire in 1918 (eight cases), five patients are alive; treated in 1919 (four cases), two patients are alive; treated in 1920 (ten cases), seven patients are alive; a total of sixty-three per cent. of the patients living in 1924.

SARCOMA

In sarcoma, the prognosis, generally speaking, is not so good, for we are dealing with rapid growth processes appearing frequently in the youthful, and manifesting a great tendency to recurrence and metastasis formation in distant organs. Although the results from raying—radium or x ray—are not brilliant in respect to the duration of the cure, it still is justifiable to ray even the primarily operable, since surgery alone holds out no hope at all. In a series of cases observed by Forssell in Stockholm and treated only by radiation, eighty per cent. were primarily inoperable. The diagnosis was confirmed by the microscope in all cases. In this discouraging group, eighteen per cent. of the patients were alive and clinically free from sarcoma after five years. In

a second group, treated by a combination of surgery and radiation, forty per cent. were primarily inoperable. After six years sixty per cent. were free from recurrence. These figures are remarkable for the reason that many of these cases were so extensive locally that an early recurrence after operation should have been expected. Though it is difficult in this group of cases to estimate the rôle played by radiation therapy, still, the relatively long duration of the results speaks for its value. In a third group of cases, all primarily operable, and treated only surgically, there were only two per cent. of the patients living after two years.

Hardly any other growth regresses and disappears so well under radiation therapy as sarcoma; but no growth recurs so rapidly in spite of treatment. And furthermore, there are forms of sarcoma, especially periosteal sarcoma, that are absolutely refractory to any treatment—surgery, radium, x ray vaccines, toxins, arsenic, or anything else that modern scientific medicine has so far attempted.

CANCER OF THE BREAST

One of the most important localizations sought out by this treacherous disease is the breast. There it occurs so frequently that many cancer institutions report that fifty per cent. of all their patients are cases of breast cancer.

The diagnosis is not always easy. Not rarely chronic mastitis is subjected to radical operation, having been wrongly diagnosed as cancer. Tuberculous disease of the breast often simulates cancer, and in several cases of fat necrosis following injury of the breast a radical operation has been performed under the same mistaken diagnosis. These errors in diagnosis occur in the best institutions and in the hands of the most experienced and skilled men. Mobility of the tumor within the breast tissue, long depended upon as a diagnostic sign, does not always exclude the presence of cancer. Frequently all aids to a diagnosis fail. Therefore, all growths in the breast of a woman above thirty-five years of age are to be regarded as suspicious of malignancy. In general, one may say that the length of time that has elapsed since the discovery of a mass in the breast and its rate of growth vitally affect the prognosis. (The possible early existence of metastases, undiscoverable by any means we possess, of course, must be left out of consideration). The scirrhous form is less malignant than the medullary cancer of the breast. Being usually of the scirrhous type, the cancer seen in male breasts gives a relatively more favorable prognosis. Doubtful cases of breast cancer in which operation was performed solely to avoid wrongly considering them benign, often take on a very malignant course postoperatively.

Breast cancer is the best example of the fact that surgical technic, which at present seems to have been developed to its greatest height, does not sufficiently take into consideration the danger of the implantation of cancer cells into the lymph and blood paths within the operative area. If within eight weeks, or even less, after a radical breast operation it is possible to determine the presence of metastases in the axilla, or above and below the clavicle, which had not been there before the operation, then it is not difficult to suspect that they are due to implantation into the lymph paths, occurring during the operation. The same is true of surgery in other localizations of cancer. These implantation metastases following operations for cancer of the breast are often seen in the stitch canals. When, however, the operation was performed on a part located internally, such evidence of implantation does not visibly manifest itself. I feel convinced that this implantation and dissemination of cancer cells during operation is one of the chief reasons for the numerous surgical failures. This was strongly emphasized at a recent French surgical congress. What is true in France in this respect is true also in all other parts of the world; and, therefore, we must look for other means of treatment than purely surgical. Probably the most successful attempt to improve the results is found, at present, in the combination of surgery with physical agents. Visits to the cancer institutes disclose that the mortality statistics of this dread disease have been considerably improved by these measures.

It should be mentioned here that beside implantation metastases, other recurrences following operation are also observed. These latter seem much more difficult to influence than is the primary tumor. This observation has led Wintz in Erlangen to drop operation entirely and to subject all mammary cancers to x ray treatment only. In my opinion this is a hazardous method in the present state of our knowledge, although Wintz speaks of eighty-five per cent. (!) cures over a two year period of observation.

When we consider the multiplicity of the causes of cancer it becomes manifest that to carry out a specific therapy places before us a manifold and difficult problem that always has, and still is, baffling science. For there come into consideration as causes of cancer animal and plant parasites, chemicals, such as anilin and tar, and physical irritants.

Furthermore, chronic inflammations cause a predisposition, that is, changes of metabolism in the tissues, which some day may lead to cancer formation. What the exciting factor is we do not know in most cases. We only know that these changes must exist uninterruptedly over a long period of time, for a cancer formation finally to occur. But we also know that on the basis of these inflammations arise not only malignant but also benign tumors; and also, that what at first may appear benign may later become malignant.

In estimating the prognosis of cancer after operation, it is of the greatest importance to consider the fact that in the majority of cases recurrences and metastases develop within the first year of observation, and of these, at least one half develop within the first six months. In the cases where a deficient operative technic is to be blamed for implantation metastases, they occur the most rapidly, often after four to eight weeks. In general, one can assume that if after two years there is no recurrence it will not take place later and also that the danger of metastasis is less.

The question frequently arises whether the later development of tumors is always a metastasis, or whether it is a second primary tumor which develops in a tissue now predisposed to the disease. Surely not everything that is considered a metastasis is really one. Roesle has shown that in cancer the disposition to tumor formation is widespread—in more

than half the cases there are other tumors beside the carcinoma, though, naturally, the latter dominates the picture. Operation can do away with only the completed tumor formation, but it cannot prevent a new primary tumor formation in predisposed tissue.

The prognosis of cancer is also dependent on the age of the cancer patient. Malignant tumors have their favorite ages. Statistics show that sarcoma appears before the fortieth year, mostly between twenty and thirty; cancers of the digestive tract after the fortieth year and principally between the ages of fifty and sixty. Only the rectal carcinoma is one of senility and if one has no cancer up to the seventieth year, he is as good as safe from cancer with the exception of rectal and skin cancer.

CARCINOMA OF THE RECTUM

The rectal carcinoma when it appears after the seventieth year of life is comparatively benign. It may drag on over years and if a threatening ileus does not make operative intervention imperative it may exist for ten years or longer. The surgeon should, whenever possible, leave such cases in the aged alone. But, if anything at all is done, only an artificial anus should be made to prevent irritation of the tumor by fecal masses passing over it. Radium treatment, when conservatively applied, is far preferable to a dangerous radical operation. The technical errors made by the insufficiently trained, who have discredited radium treatment in these cases, were the effect of a too intensive dose causing burns which tortured the patient more than the carcinoma had done before. One should be satisfied to have the radium diminish the size of the growth, so making the lumen of the intestine larger and diminishing the subjective complaints. At an advanced age, it really is not imperative that everything should be radically removed, since even the tendency to metastasis formation is slight. Everything that has been said about rectum cancer in senility is also true of breast cancer. One should carefully consider whether it is not more advisable to refrain from radical therapeutic measures in cancer occurring in senility.

If radium is applicable in any given case, one cannot consider such treatment a serious intervention. X ray treatment, on the other hand, is not as harmless. In an old person it is not an indifferent matter to have the patient remain for sixty minutes or more in absolute quiet and lying in an awkward position. And the raying for several hours, as it is now practised in some quarters, constitutes a danger to life even in young individuals.

TRAUMA

We now come to the question of the influence of trauma on the development of cancer. Many patients trace the development of the growth to a preceding injury and numerous authorities maintain the same viewpoint. This question is not easily answered. "The relation of malignant disease to injury is frequently raised in medicolegal inquiries. That carcinomatous and sarcomatous tumors develop after an accident close to the site of the injury, and that the one is the direct sequence of the other there is not the least doubt. How the tumor comes we do not always know. A man receives an injury to the right side of his chest and dies ten months afterwards from malignant disease of the liver. Another man falls on his head in a shipyard and a year or two afterwards dies from a sarcomatous growth in the brain." (3)

In the cancer cases occurring in young persons, especially sarcoma, there often seems to be a positive connection between traumatism and the development of the disease. The statistics of one cancer institute show such a connection in thirty per cent. Taking the statistics embracing a large number of institutions this connection between traumatism and the development of sarcoma cannot be definitely established in quite so large a percentage; but it is also impossible to deny it entirely. For there are cases where, at the time of the trauma, neither the finger nor the eye can detect the existence of a tumor. But there is no doubt at all that in cases of already existing carcinoma or sarcoma a traumatic insult exerts a harmful influence. The observation is frequently made that a relatively benign course may, as a result of injury, become a rapidly progressing malignant one and that rapid metastization takes place, as Lubarsch has shown. Knox has called attention to the fact that even the frequent and energetic palpation of breast cancers during routine examinations squeezes the cancer cells into the lymph vessels, as was microscopically demonstrated.

PREDISPOSITION

As far as family predisposition is concerned one must admit that not infrequently one runs across groups of parents, children, uncles and aunts all afflicted with cancer. There is, also, probably such a thing as a hereditary predisposition and then we find the cancer always occurring at about the same decennium of life. A contagion with cancer cannot be seriously considered. *Cancer à deux,* the cancer of husband and wife, is very rare.

Williams (4) observes that "If cancer could be proved to be an inoculable contagious malady, the question as to its causation would be greatly simplified, in favor of extrinsic factors, but, so far as we have hitherto examined this question, no reliable evidence of contagion has been forthcoming." He adds that he never noticed "a single fact that could possibly be construed as evidence of the communicability of malignant disease from one human being to another."

SURGICAL TECHNIC

We have seen that the fate of the cancer patient in whom the tumor is still localized, and who has no demonstrable metastases, depends upon the success of the treatment—operation and raying. That the surgical technic in all large institutions of the world is today skilfully and thoroughly applied cannot be denied. The number of cancer cases where one can establish a faulty surgical technic is comparatively small. Consequently it is the more remarkable to observe that a considerable number of cases a short time after operation, often not more than one or two months, give distinct evidence of lymph node metastases, which we cannot assume were present at the time of the operation and were overlooked. It is, therefore, not unfair to demand that immediately after operation prophylactic aftertreatment with x ray or radium should be undertaken,

RADIATION TECHNIC

Not so much can be said for the technic used in raying as for the surgical technic. In the first place, much confusion exists in this branch of therapy as to apparatus, dose, and other factors. The majority of patients seen by a cancer institute have before their admission been either insufficiently or excessively rayed. Antiquated apparatus not suitable for therapy is used by one; another permits the treatment to be carried out by some lay technician without proper instruction about the individual case. It is to be remembered that the technic of radiation therapy can be learned only by long practical experience just like the technic of surgery. Just as little as one can learn to operate by watching a good surgeon a few times, so one cannot learn radiation therapy in this manner. And, furthermore, it should be emphasized that the radiation technic employed must always be the result of the most careful study of each individual case and that it cannot be carried out according to a scheme tacked to the wall which has been copied from a book or supplied by the manufacturer of the machine. The carcinoma and sarcoma dose propagated by Erlangen is a myth. The mere possession of an x ray apparatus or a certain amount of radium is not sufficient. But one must by serious application become expert in the field before assuming the responsibility of treating those ill with carcinoma. I have heard of instances where cancer patients were treated with Alpine light as a substitute, while the x ray apparatus was in repair. These many digressions from the scientific path have led to discrediting the raying of malignant growths. It is easy to understand that the surgeons rather do operations which they understand than use radiation therapy, which they are only hazily informed about. Both physicians and patients take radiation as a method of treatment much too lightly, for it is not only a difficult method, but a far reaching one. Frequently a mere regression is confused with a cure and the patients withdraw from further treatment, in this way courting disaster, which is sure to overtake them.

MORTALITY

The mortality from cancer is almost as large as that from tuberculosis and after the fiftieth year of life comprises a considerable fraction of the total number of deaths.

Then if radiation is, as I believe, a method to reduce this mortality, it is our duty to see that the cancer patients get the benefit of the best developed technique—surgery and radiation.

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Dysentery, Malaria, Intestinal Worms and Other Tropical Diseases*

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The subject of tropical diseases is ordinarily not considered one of keen or pressing interest by the average general practitioner, unless he happens to live along the southern border where many of the diseases ordinarily considered tropical appear with a tolerable degree of frequency. A brief discussion of this class of maladies may not, however, be amiss, as some of them, such as dysentery, malaria and the various intestinal worms, are occasionally encountered in all parts of the country; and the information on the rarer diseases will be given so briefly that it may prove of interest.

AMEBIC DYSENTERY

Amebic or tropical dysentery is very rare in this country, except in the extreme southern states which are practically subtropical in climate. The fact, however, that it *does* occur in the northern states is emphasized by the circumstance that an epidemic has recently occurred in Connecticut, a study of which was published in *The Nation's Health* (1).

The causative organism is the Entameba histolytica which enters the body through the drinking of infected water or the eating of uncooked green vegetables which have been infected either from the water or by being manured with the excrement of human beings suffering from this disease. The pathognomonic point is the finding of the entameba in the stools of the patient. The remedy usually administered is emetine which is given hypodermically in one third grain doses, three times a day, for ten days, with no intermission. Dr. J. G. Smith (2) recommends the administration of the double iodide of bismuth and emetine in daily doses of three grains, by mouth, for twelve days, stating that, under this treatment, the cysts disappear from the stools within forty-eight hours.

BACILLARY DYSENTERY

This form of dysentery is much more common in nontropical regions than the amebic form. The severer cases are caused by the Bacillus of Shiga and the milder ones by those of Flexner or Cruse. Symptomatic treatment should always be carried out in these cases, including absolute rest in bed, with adequate coverings, a diet of albumen water and strained cereal gruels, meat juice and such like. Milk should be avoided and lactose substituted for cane sugar. Jellies and sago pudding may be used.

Buchanan recommends the administration of sixty grains of sodium sulphate every two or three hours until the stools lose their dysenteric character.

*Read before the Medical Round Table of Chicago, April 9, 1925.

SERUM TREATMENT

All authorities agree, however, that the serum treatment offers the greatest probability of a prompt and satisfactory cure. Smith, *loc cit.* states that serum reduces the mortality from thirty-three to fifty per cent., the effect being most marked in severe cases. Dr. A. G. Phear (3) considers it of the greatest value and recommends that it be given early and in sufficient doses (sixty, eighty to one hundred c. c., subcutaneously). The Shiga or Flexner serum should be used according to the type of infection; but, in severe cases, it is dangerous to wait for typing of the organism, which is probably of the Shiga variety, and it is better to give a polyvalent serum immediately, at the same time having the organism typed so that the second dose may consist of the specific serum indicated. In urgent cases, this remedy may be given intravenously, combined with hypertonic salt solution.

Dr. Simon Flexner (4) has published a very favorable report on the use of his serum, recommending doses of from ten c. c. (in children) to twenty c. c. subcutaneously in mild cases; while, in very severe infections, he gives from fifty to one hundred c. c. intravenously. The effects are prompt and the mortality is reduced from seventy to eighty per cent.

MALARIA

This disease, which used to be very common in all parts of the United States, is now comparatively rarely met with except in subtropical regions. In our tropical possessions, such as Panama and the Philippines, all types are present and practically all of the natives have it, either in active or latent forms. Any condition which tends to lower the general body resistance, such as wounds or other diseases or infections, will cause the latent malarial infection to become active, with, sometimes, disastrous results.

TREATMENT AND PROPHYLAXIS

The use of quinine, in doses of five grains daily or fifteen or twenty grains once a week, acts as a very effective prophylactic. This should not be considered a substitute for, but supplementary to the measures to be adopted for mosquito control.

The treatment consists in the oral, intramuscular or intravenous administration of quinine in a *systematic* manner although some cases which fail to respond to quinine are relieved by the use of old fashioned Warburg's tincture. If quinine is to be given by mouth, ten grains should be administered, three times daily, until the temperature has been normal for five days, after which ten grains should be given at bedtime, each night, for eight weeks. The subcutaneous administration of quinine is somewhat dangerous and has no especial advantages. Intramuscularly, quinine and urea hydrochloride should be given in doses of ten grains dissolved in two c. c. of water daily, for one week; weekly for one month; and every two weeks during the second month. This solution is difficult to sterilize and the only way to be sure that it is safe to use is to autoclave it. In some cases the intravenous administration of quinine is most satisfactory. Preparations put up in solution in sterile ampoules are best and seem to act even better when combined with some form of arsenic.

Neosalvarsan has been used intravenously by some observers with excellent results.

HELMINTHOLOGY (WORMS)

In tropical countries, the natives are so universally infested with one or more varieties of intestinal parasites that they would be lonesome without them, and many harbor from two to five varieties simultaneously. Tapeworms are occasionally found in all parts of the country and the treatment with male fern, as it has been practised for many years, is as good as any. The oldfashioned remedy of eating raw pumpkin seeds does well in some cases.

ASCARIDES, OR ROUNDWORMS

Ascarides, or round worms, also are fairly common and, while the use of santonin, as has long been practised, is of value, it is believed that the treatment with oil of chenopodium, as outlined in connection with hookworm, will prove to be more satisfactory in most cases.

This parasite is often considered to be harmless, but it causes great loss of energy and lowering of general resistance in many cases, and may even cause death. There is a specimen in the Army Medical Museum, in Washington, of a human liver in which every large bile duct is packed full of ascarides, which condition resulted in death. A case has been reported (5) in which a mass of forty-nine round worms occluded the bowel and were removed at an operation performed for a supposed intussusception.

HOOKWORM

This is the most serious of any of the intestinal infestations, the parasites involved being the Strongyloides intestinalis (most common in the Orient) and the Necator Americanus which is commonly found in this country. No one will ever be able to estimate the enormous economic losses, to say nothing of the losses of health, vitality and happiness, which have resulted from the depredations of this parasite in our southern states.

The larvæ are present in the droppings of cattle and enter the human host through the skin, usually of the feet, of those who go barefoot over ground fertilized with cattle dung. The initial lesions are called ground itch. The symptoms of a fully developed case of ankylostomiasis are too well known to require restatement.

The treatment formerly used in this disease was to starve the patient for about twenty-four hours and then administer ninety grains of thymol in three equal doses, two hours apart, followed in two hours by a saline purgative. The diagnosis is made by finding the ova in the patient's stools.

At the present time the most commonly accepted treatment is with oil of chenopodium, which is administered, with no preliminary purge or starvation, in two doses of one c. c. each, two hours apart, followed in two hours by a saline purgative. No food must be eaten while this treatment is in progress. Some authorities give the two c. c. of the oil at one dose, preceding it with a purge given the evening before treatment and following it with a saline after two hours. While thymol failed to cure in 23.6 per cent. of a series of cases, this treatment failed in only 7.6 per cent.

Dr. T. M. Lambert, of Suva, Fiji (6), favors the use of carbon tetrachloride (CCl_4) with which drug he has treated over fifty thousand cases among the

natives of the Fiji Islands, with satisfactory results. The adult dose is three to four c. c., given by mouth, although more may be given without danger if the preparation is absolutely pure. Impure preparations are always dangerous. To children he gives two tenths of a c. c. for each year of age from two to fifteen years. He precedes the treatment by a purge of magnesium sulphate the evening before, and gives the drug, covered with water, in a tablespoon. No food, and especially no alcohol, should be taken for several hours before and after the treatment is administered. A purge of magnesium sulphate should be given three hours after the treatment. Dr. Lambert considers carbon tetrachloride a vermifuge and vermicide of great potency for hookworm and oxyuris vermicularis, but not so good as oil of chenopodium for ascarides lumbricoides.

SKIN DISEASES

Skin diseases are varied and prevalent in all tropical countries but particularly the mycoses, or fungus infections, which are most frequently seen in this part of the country as ringworm or barber's itch. The most satisfactory treatment for these cases is to paint the affected parts with a ten per cent. solution of salicylic acid in ninety per cent. alcohol. This may be repeated from one to three times a day as necessary until the parasite is killed. In severe cases involving small areas, the salicylic acid may be dissolved in compound tincture of benzoin, which stays in place better and, therefore, acts longer, but which causes rather severe burning sensations if applied to large and, especially, to sensitive areas of the skin.

PARAGONIMIASIS (LUNG FLUKE)

This disease is rare, even in the tropics, and is almost unknown in this country and of interest only from the fact that it produces symptoms, including hemoptysis, which closely resemble those of pulmonary tuberculosis. The parasite usually enters the body from the eating of infected crabs, passing through the intestines into the abdominal cavity and through the diaphragm into the lung. The treatment is symptomatic, large doses of potassium iodide being the only remedy which approaches a specific.

LEPROSY

Leprosy is quite common in almost all countries where the Malayan or brownskinned race is present. The diagnosis is by the finding of the Bacillus lepræ in the lesions; and the treatment, which is now producing fairly satisfactory results, is by the administration of chaulmoogra oil or its esters. A considerable percentage of cases of leprosy are now being pronounced arrested (as we do with tuberculosis) after this treatment, and returned to their homes.

CHOLERA

This disease has, in years past, been the scourge of all tropical countries, particularly those of Asia, and is now endemic in the Philippines and to a less extent in our other tropical possessions. The etiology is by the ingestion of a cholera vibrio with infected foods or drinks. Death occurs in this disease largely as the result of acute dehydration, the patient frequently losing from fifty to seventy-five pounds in weight within twenty-four hours by the profuse vomiting and purging. If sufficient water can be kept in the system to keep a cholera patient alive for three or four days, he will very generally recover and the treatment, therefore, consists in the intravenous administration of large quantities of warm, physiological salt solution, repeated at frequent intervals, as the necessity of the case demands.

This brief sketch of the conditions which our fellow practitioners in the tropics have to face, and with which I have had several years of experience, will, it is hoped, prove of interest and some of the suggestions relative to conditions quite commonly found in all parts of the United States should be of practical value. For the benefit of any who care to go further into the study of this class of diseases, a brief bibliography is appended.

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New Clinical Aspects of the Steinach Operation

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(*Continued from page* 457)

Case LXIX.—Letter carrier, aged sixty-three. He was first seen in February, 1922. Complained of feeling tired, short of breath when walking fast, urinating frequently at night, but sexually normal. The general examination was negative. The case was considered one of acute exhaustion, due to overwork. He was advised to rest and report back in one year. Patient was seen again in January, 1924, nearly two years later. He had greatly aged. His complaints were more pronounced. He felt distinctly that he could not do his work as he used to. He was sexually much weaker and his memory had become rather poor. His weight was 143 pounds. Blood pressure 140/80. Pulse 72. Skin reaction almost absent. Prostate was larger than two years before. He had lost weight. Incipient senility was the diagnosis. January, 1924, a bilateral operation was done. The patient improved steadily.

January, 1925 (one year after operation), he said he felt as if "new born," while life used to be a hardship before the operation. He was working hard without undue reaction. Sexually perfectly normal. Less nightly urination. Blood pressure 135/85. Pulse 68. Weight 145¾ pounds.

Case LXXVIII.—Physician, aged seventy-one. General decline. Frequent spells of dizziness. Loss of weight. Blood pressure 147/85. Pulse 80. Prostate moderately enlarged. Weight 112½ pounds. The diagnosis was senility. March, 1924, a unilateral operation was done.

No reexamination could be performed but the patient reported in December, 1924 (nine months after operation), that he has markedly improved. Believed he began to improve within a month after the operation by having a more cheerful outlook on life. He says, however, that some of that might have been psychological. Nine months after the operation, his improvement was objective. His weight had increased ten pounds. He had much more physical strength and endurance and he was "able to do things without undue fatigue that were entirely beyond his strength before the operation." He noticed a faster growth of hair and has to see a barber more often; no noticeable change in color of hair. Skin reported less dry. Sexual ability improved. His mental strength and endurance are better. He can "study for a longer period with more satisfactory results." He can concentrate better but has not noticed any change in his memory or ambition. His vertigo is very much improved. He concludes his letter with the following statement, "improved in almost every way to a considerable degree."

Case LXXIX.—Insurance agent, aged seventy. Impotentia for the last year, libido strong, wants to marry again. Feels generally well. Seventeen years ago a gastrectomy was performed on account of cancer (?). Has had no stomach disturbance since. Pulse 60. Blood pressure 160/80. His pulse has an occasional extrasystole. Heart sounds clear. Testes normal. Prostate slightly hard. The diagnosis was incipient senility, impotence. March, 1924, a bilateral operation was done.

No reexamination could be performed, but patient reported in December, 1924 (nine months after operation), a marked improvement all around beginning about two months after operation. Patient had remarried. He described his sexual ability as "as good as at thirty-five years of age." He had much more strength and endurance and an optimistic outlook on life. He wrote, "the operation has been far more beneficial than I could have anticipated. I am in splendid health and am in full possession of my physical powers as I have been at any time in thirty years and sexual intercourse is not accompanied by lassitude but I immediately recuperate. The operation to my mind was eminently satisfactory and all that I could desire."

Case LXXXII.—Mechanic, aged forty-five. Drowsy and tired always. Decided lack of energy for past two years. Losing weight. Frequent coughs. Poor sleep, nervous and irritable. Greatly handicapped in his work. On examination, patient showed moderate diffuse bronchitis. X ray of his chest showed some fibrosis with signs of old tuberculous lesions. Outside of that, examination negative. The diagnosis was premature senility, chronic bronchitis. A unilateral operation was done April, 1924.

No reexamination has been possible but patient reported in December, 1924 (eight and a half months after operation), to be very much improved. He had more appetite and had gained in weight. He noticed that his hair has become heavier. He feels like working. Has lost his headaches and sleeps well. He thinks the operation "has done him a world of good" and "has made a man out of him."

Case LXXXIV.—Lawyer, aged sixty-two. There had been a decline of vitality and endurance for past ten years. Occasional attacks of rheumatism. Sleep was often broken. Erections poor. Had lost some weight. Weight was 121¼ pounds. Pulse 92. Blood pressure 180/105. Occasional extrasystole. Right testis very atrophic. Left, normal. Prostate somewhat enlarged and hardened. A diagnosis of incipient senility with hypertension was made. April, 1924, a bilateral operation was done.

No reexamination could be performed, but the patient reported in December, 1924 (eight months after operation), that he had begun to improve three months after operation, especially as far as his physical and mental strength and endurance and general sense of wellbeing were concerned. He wrote, "I find in work and in play (golf for instance), that I have more energy and power than formerly." His sexual ability had not changed. He also stated that he has neuritis occasionally. In May, 1925 (eleven months after operation), patient reported to be in good health, "in some respects better off than a year ago."

Case LXXXV.—Salesman, aged fifty-five. Lack of pep and ambition, especially pronounced during the last year and a half. Was frequently sleepy during the day, while his sleep at night was disturbed. Had to "whip himself" to his work. Distinct decline in sexual ability. Desire lacking, erections weak and ejaculations somewhat premature. Examination negative. A diagnosis of incipient senility was made. In April, 1924, a unilateral operation was done.

May, 1924 (one month after operation), moderate improvement noticed. More energy, less sleepy in daytime. Somewhat stronger erections. Blood pressure somewhat lower within normal limits.

In December, 1924 (eight months after operation), reported that his improvement had continued and he wrote, "While I have not made the marked changes some others have, I am much pleased and consider it successful to a great degree."

June, 1925 (fourteen months after operation), for the last two months improvement more distinct than at any time before. Working ability perfectly restored. Sleep good and refreshing. Patient was sexually much stronger. According to his statement, the same as between the ages of thirty-five and forty years. Ejaculations, however, were still premature. His physical condition was negative. Blood pressure was somewhat lower within normal limits.

Case LXXXVIII.—Merchant, aged fifty-two. For past thirty years patient had had periodical mental depressions with great general nervousness and inability "to meet anybody." Such attacks occurred once a month and lasted about ten days. Sexual ability had decidedly declined for the last five years, ejaculatio retardata. His mother had suffered from periodical depressions, also one sister. Patient had gonorrhea twelve years ago with right epididymitis. Contracted lues three years later but was thoroughly treated. Wassermann, however, still showed two plus and further treatment was advised. Pulse 68. Blood pressure 160/85. Weight 122 pounds. A

diagnosis of periodical depressions, incipient senility and lues was made. May, 1924, a unilateral operation was done. (Existing lues was considered no contraindication. On account of the old right sided epididymitis, the operation was performed on the left side.)

No reexamination could be performed, but patient reported in December, 1924 (seven months after operation), that he began to improve two months after operation, his periods of depression becoming milder and rarer. He had gained five pounds in weight. His physical and mental strength and endurance, as well as his sexual ability, had improved and his general outlook on life was much better. He feels that the operation will gradually effect a cure. I am inclined to consider the result as positive.

Case XCIV.—Storekeeper, aged forty-four. Patient was a brother of the man suffering from manic depressive insanity described under Case XXIII. He also had attacks of depression several times a year for the last five years, which, however, have become constant and more severe during the last two months. No treatment had been of any help. He had suicidal tendencies. Sexually he had always been below par. Was impotent during state of depression. Patient appeared pale, drawn and haggard. Pulse 76. Blood pressure 100/75. Weight 158½ pounds. Reflexes greatly exaggerated. Skin reaction faintly red, almost absent. Testicles and prostate normal. This was found on first examination in October, 1922.

Patient was examined again in June, 1924 (over one and a half years later). His condition had not changed since and he had, therefore, been in a constant state of depression for nearly two years. A diagnosis of manic depressive insanity was made. June, 1924, a unilateral operation was done (small hydrocele opened at the same time).

In October, 1924 (four months after operation), patient began to feel his depression disappearing. He had more energy and was doing a great deal more business. His head felt clearer. He was sexually stronger. His former constipation had disappeared. Pulse 72. Blood pressure 115-120/70. Weight 166 pounds. Skin reaction distinctly red.

April, 1925 (ten months after operation), patient's face had greatly changed. Drawn expression had disappeared. He looks ruddy and healthy. He has gained nearly twelve pounds. His weight is now 170 pounds. Has had no depression since the operation, although he does not feel equally well at all times. His physical examination is about the same as in October. His formerly exaggerated reflexes, however, are normal.

Case XCVIII.—Music teacher, aged sixty-nine. Had lost elasticity especially during the last year. Occasional attacks of dizziness. Weakness of right hand and right arm especially noticed when playing piano. Felt distinct general and also sexual decline. Wanted to restore his physical and mental strength. His heart was slightly enlarged. Pulse 64. Blood pressure 140/75. Weight 183¾ pounds. Reflexes more distinct in left arm and leg than in right. A diagnosis of incipient senility with myocarditis was made. In October, 1924, a unilateral operation was done.

Patient had sent regular reports, which showed the following: For six weeks after operation he noticed no improvement. Then, however, a noticeable mental quickening took place, with slightly more physical vigor.

In January, 1925 (exactly three months after operation), he wrote that his muscular suppleness had increased and stiffness in his knees had disappeared. His right arm and fingers had become normal and he could use them as well as ever. His mind was more elert and clear. No increase in sexual desire.

In February, 1925 (four and a half months after operation), he wrote, "wrinkles on the back of my hand are smoothing out and my hands are getting plump. My students and friends are frequently telling me that I am looking better than I have in years. I am gaining slowly in physical strength although walking up two flights of stairs still makes me breathe a little rapidly. Sex condition, I think, is slowly improving."

In April, 1925 (six months after operation), patient reported his weight to be 190 pounds. His blood pressure 130/90. He wrote, "my doctor says my heart is slightly larger than normal. My face has filled out quite youthfully. My friends are constantly remarking upon my looking well. Mentally, I am about forty. My physical strength is gradually improving and my sexual strength also. I do not become nearly as short of breath after going up stairs as formerly. Feeling well always."

Case CII.—Manufacturer, aged sixty-one. Gradual loss of strength for several years. Sleep poor. Frequent pain in left leg and in back, diagnosed by his physician as "rheumatism." Sexual ability distinctly declining. Erections fair, but ejaculations premature for the last two years. Examination generally negative. Pulse 88. Blood pressure 132/75. Skin reaction absent. Weight 139¼ pounds. Prostate somewhat large. A diagnosis of incipient senility was made. November, 1924, a bilateral operation was done.

December, 1924 (seven weeks after operation), no change noticed. Pulse 86. Blood pressure 120/80. Skin reaction faintly red. Weight 144 pounds.

June, 1925 (seven and a half months after operation): "rheumatic" pain in leg and back entirely gone. His sleep, as well as general strength and endurance had improved. He had more hair on his chest. Pulse 88. Blood pressure 135/85. Skin reaction distinctly red. Weight 147 pounds. Sexually he had not improved but there is no further decrease in sexual desire and in erections. In spite of the negative sexual stimulation, the general improvement was distinct enough to call the result positive.

Reviewing the results of the cases reported, a great deal of information can be gained.

The principal indication for the operation has been and still remains the process of ageing. Although the decreasing gonadal activity is probably only one of many causes of this process, it still appears to me a most important cause, and I have advised, or consented to the operation only in those cases where a decreasing function of the sex gland activity could be assumed. Such a decrease, however, may begin early in life, due to a congenital inferiority of the gonads and the extreme cases of this group are represented by the eunuchoid type.

A most frequent symptom of this congenital inferiority with hypofunction is sexual impotence,

which, however, constitutes on the whole a small percentage of all cases of impotence. To be quite clear—I am not thinking now of organic impotence (tabes, and other conditions), nor of impotence due to and associated with premature or physiological senility. Each is a chapter in itself. I am thinking of the functional impotence of younger men (juvenile impotence) which forms such a difficult problem in medical practice. In those cases of impotence operation could be performed, if distinct signs of hypogonadism existed, but the operation should be followed up by psychoanalytic treatment, since we cannot imagine a hypogonadal state without corresponding reaction on the psyche. Furthermore, the mental state of the patient may retain inhibitions, fixations, and other conditions, although the somatic foundation of his impotence is removed. The result may thus still remain negative.

Regarding diagnosis of hypogonadism and the indication for the operation, I believe that the physical condition of the testicles is an important factor. I usually test their consistency like an eye is tested for glaucoma. If they are distinctly undersized and flabby, and if a corresponding underdevelopment of secondary sex characters is present, and if these findings are further confirmed by a lack of mental importance of sex life (showing absence of proper erotization of the brain), possibly with other symptoms of an endocrine deficiency, then the operation could be performed—of course, only unilaterally. In other cases of functional impotence, I have occasionally operated, after all other forms of treatment had been exhausted, and where I felt fairly certain that it was not a case of psychic impotence alone. Anyone who would operate too freely in cases of impotence will surely experience great disappointment. The symptom of premature ejaculation, especially, is hardly ever favorably influenced by vasoligation. This is not surprising in view of the fact that this condition is either purely psychic or the result of an inflammatory process of the posterior urethra. In any case we have so far no reason to assume that it is of endocrine origin.

TABLE I

Twenty-one Cases of Hypogonadism and Sex Impotence (Without Signs of Senility or Premature Senility)

Case No.	Profession or Business	Age	Date of Operation	Unil. Bilat.	Time of Observ.
5	Laborer	38	Feb./20/22	u.	
10	Dentist	39	Mar./17/22	u.	2½ Mos.
13	Importer	43	Apr./21/22	u.	5 Mos.
19	Pharmacist	38	Aug./4/22	u.	
20	Dyer	39	Aug./7/22	u.	28 Mos.
21	Patrolman	45	Aug./8/22	u.	28 Mos.
24	Laborer	35	Sept./22 and Dec./1923	u.	30 Mos.
29	Laborer	39	Oct./30/22	u.	
30	Dentist	34	Nov./10/22	u.	8 Mos.
32	Factory-worker	52	Jan./22/23	u.	23 Mos.
36	Secretary	37	Apr./2/23	u.	20 Mos.
45	Clerk	29	Aug./17/23	u.	6 Mos.
51	Salesman	29	Aug./29/23	u.	14 Mos.
71	Engineer	36	Feb./7/24	u.	
87	Salesman	49	Mar./6/24	u.	12 Mos.
90	Ins. agent	37	Mar./13/24	u.	4 Mos.
91	Manufacturer	41	May/14/24	u..	12 Mos.
93	Actor	44	June/6/24	u.	9 Mos.
95	Teacher	27	Sept./11/24	b.	
111	Storeclerk	33	Apr./23/25	u.	
112	Factory worker	33	Apr./27/25	b.	

RESULTS

Strongly positive with constant benefit in two cases (20 and 51).
Doubtful in one case (90).
Negative in eleven cases (10, 13, 21, 24, 30, 32, 36, 45, 91, 93).
No report available in five cases (5, 19, 29, 71, 95).

An assumed congenital inferiority, with early hypofunction of the gonads and functional impotence as the principal symptom and functional impotence unimproved by other treatments, has been the indication in twenty-one cases. In fourteen, a conclusion can be drawn as to the results, which are shown in Table 1.

These results are decidedly disappointing, and it is most probable that the psychic element in those cases was more important than it appeared to be. In only two cases a definite improvement has taken place. In some of the other cases a further psychohygienic treatment may still bring on some results, after the underlying endocrine deficiency has been improved.

To repeat once more, cases of functional impotence which are not due to premature or physiological senility, could form an indication for the operation, if gonadal deficiencies are apparent, but I would advise in all those cases psychotherapy in addition. Patients with the probable diagnosis of a psychic impotence should not be operated on, unless the operation is considered an ultima ratio after thorough psychotherapeutic measures have failed to accomplish results. After such conclusions it appears rather preposterous to still regard the Steinach operation as a "sexual operation." The only sexual element in the procedure is the point where the impetus is given: the sex gland.

Decidedly better results, as far as impotence is concerned, are obtained where the impotence is one of the symptoms of approaching age, either premature or physiological. Here naturally the latter and not the impotence was the indication for the operation.

It is naturally impossible to draw a sharp border line between premature and physiological senility. The age of the patient is no criterion on which the indication for the operation can be based. However, I believe that with very few exceptions men over sixty are entitled to the operation, even if symptoms of a general decline of vitality are not strikingly noticed. The indication would naturally be accentuated, if subjective, as well as objective, symptoms of senility, like beginning arteriosclerosis, hypertension, prostatic hypertrophy, certain forms of arthritis and other conditions can be diagnosed. The principal subjective complaints of these patients were lack of mental and physical vigor, often referred to as pep, decrease of ambition and endurance, tiredness, headaches, poor memory, frequent urination, decreasing interest in sex life and more or less pronounced impotence, weakened eyesight and hearing, etc. Also a study of altered endocrine functions, especially in the sphere of the thyroid or the pituitary, may be suggestive of declining gonadal activity (male climacteric). This group of cases I have classified as incipient senility or simply senility.

I have diagnosed premature senility (with or without any complicating disorders) only where definite signs of decreasing gonadal function existed. Such an acquired hypogonadism will mainly express itself in the form of impotence characterized by an increasing insufficiency of erections, in a moderate prostatic hypertrophy and possibly in beginning shrinkage or flabbiness of testicles. In addition to these symptoms within the gonadal sphere more or less pronounced signs of endocrine deficiencies may exist with symptoms of actual age in men between forty and sixty years of age.

(To be concluded)

Can a Life Be Saved by the Transplanting of an Organ?

Technic of Preliminary Experimental Work

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From the viewpoint of medical research the most promising cases are those which today are hopeless. The destruction of both kidneys by advanced tuberculosis or by accidental bichloride of mercury poisoning is such a condition.

Many investigators, believing that it would be possible eventually to transplant a living organ and save the life of a dying person, attempted it experimentally. The mistake which has been made is what experiments show,—that transplantations between mixed breeds do not take and always break down in five to ten days at best.

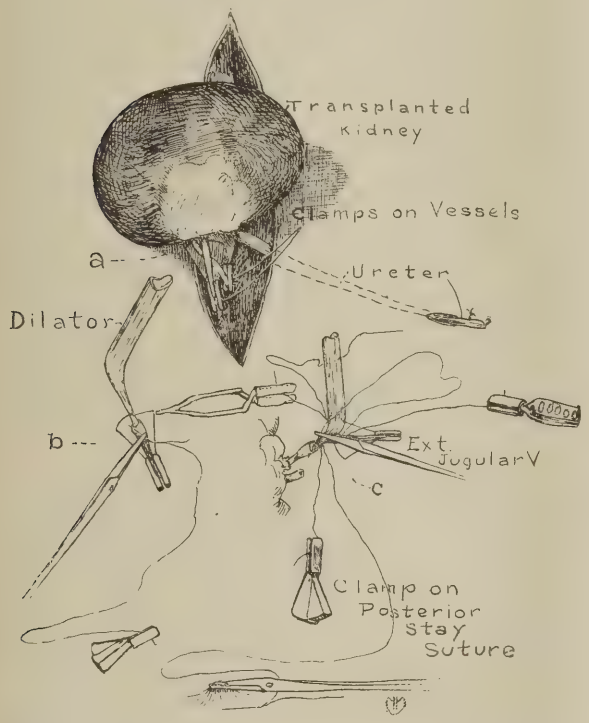

FIG. 1.—At *a* is shown a transplanted kidney with the temporary clamps about to be released and the ureter penetrating the skin and sutured down with one stitch in the lumen. A pocket beneath the deep fascia has been prepared for the reception of the kidney. At *b* is shown the taking of the first stitch in the recipient's vein which is held by a temporary clamp of special design to avoid the possible tangling in the ordinary style. The jaws are rubber covered. The end of the special glass pipette dilates the vein to facilitate the introduction of the stitches. All free ends of suture must be tagged with a clamp, as the raw silk is so fine it is too easily lost. A feature of great aid is to tie a single loop knot holding each thread to its needle. At *c* is shown the completing of the second stay suture over the pipette and uniting further the vein in the recipient with the vein of the kidney being transplanted. All of the stay sutures are inserted in the vessels of the recipient before the kidney is brought to the wound. Care is necessary to keep all of the stitch threads orderly.

After many experiments on dogs of mixed breed, goats and monkeys, a successful transplantation of the kidney with the ovary was accomplished by simply taking two dogs of the same litter. In the human, just how close a relationship is necessary has yet to be determined. Like all of the great advances in surgery it should be tried first on the hopeless case.

The material for renal transplantation is purchasable from the living subject or may be obtained as in mechanical stillbirth, for use of the mother. A newborn baby's kidney is of sufficient size to maintain life in an adult of ordinary size. The mechanical details as based on the following description of technic should be readily mastered.

The simple technic of vascular anastomosis requires only a few fundamental rules to be followed. In transplanting a kidney it is quite unnecessary to attempt to perfuse the organ. It is simply slightly squeezed to rid it of excess blood.

For experimental purposes in the dog the vessels of the neck—carotid and jugular—are admirably suited while in the human the vessels in Hunter's canal are best because later ureteral anastomosis could readily be performed allowing the excretion from the transplanted kidney to enter the bladder.

Both vein and artery should be constantly moist with saline solution. The use of oil in the artery is contraindicated because later it will have to work its way out into the excretions.

A simple way to hold the edges of a flabby vein open while inserting the first few stitches is to use saline in a glass pipette which has had a bulbous tip drawn on it.

FIG. 2.—Shows the completion of all three stay sutures in the vein. A black silk quilt cut something like a pair of pants, covers the wound beneath the artery of the recipient and another such quilt covers the same artery which already has been skinned of adventitia, cut off and had its three stay sutures inserted before covering it with the second quilt. The needle end of one of the stay sutures is about to be used for the over and over stitch around the circumference of the free borders of the veins to unite them. The depth of stitch behind the edge should be at least equal to the distance between each stitch. The distance between stitches should be about two to three times the thickness of the vein wall. In arteries about twice vessel wall thickness is right.

The best suture material is of strands of raw silk. This when threaded on No. 16 needles does the least possible damage to the intima of the vessels.

The adventitia of the recipient's vessels should be stripped peripherally.

Unless the transplanted kidney begins to function within an hour or two it is a failure and should be removed forthwith. When the tip end of the ureter can be made to bleed, it is proof of adequate renal circulation.

The most convenient length for needles is one to one and a half cm. They should have hyper boloidal pointed ends which cause less trauma and leakage than when the points are edged. The needles should be examined with the low power of the microscope to be sure about this. The points can be readily reshaped on an Arkansas stone. If proper needles and sutures are used attempts to get eversion of the intima are unnecessary.

In experimental work the vessels match best if a kidney is transplanted from a larger to a smaller animal's neck.

The ureter from a transplanted kidney should temporarily at least be led through a stab wound and held there with only one stitch passing one half cm. up the lumen.

Although the difficulties of obtaining material for renal transplantation seem of very considerable importance, this is only because the procedure is something new.

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Skeletal Traction in Fractures*

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There is an increasing number of fractures occurring as a result of the development of the automobile, the airplane, and other industrial activities. These same causes of the increased number tend to increase the ratio of nonunion cases by producing a change in the character and in the number of the fractures. This is evidenced by more cases of multiple fracture which make a greater demand on callus formation; on account of the more severe trauma to the soft parts, circulation is impaired: and on account of the trauma to bone, osteogenesis is impaired. There is a larger number of compound fractures occurring in which union is always retarded and more likely to fail, therefore the problem of fracture management is becoming more difficult.

The use of the x ray is developing a more exact anatomical requirement, which may result in too frequent manipulation in fruitless efforts to secure a satisfactory reduction, and thus interfere with the natural process of repair. The difficulties so graphically recorded by the radiograph may lead, too frequently, to the open operative reduction thus favoring delayed or nonunion by the mere incision, trauma to the periosteum and soft parts, and even in some cases to the occurrence of infection with its increasing risk of nonunion or even danger to the life of the patient.

The increased number of cases occurring under the operation of the compensation laws and the attendant numerous inspections and examinations by the financially liable insurance companies will serve to educate the public to expect and require more perfect anatomical and functional results. This may also tend to increase the number of malpractice procedures instituted and thus excite on the part of the medical profession, a greater interest in the subject of improving fracture end results.

No fracture is properly handled unless as an end result we secure for the patient the maximum of function and the minimum of deformity possible; always considering the factors present in the individual case.

Our mechanical task is to provide and maintain close apposition and true alignment; to protect the organizing matrix and young callus as it develops; and to allow unrestricted circulation in the adjacent soft parts.

One of the many activities of the American College of Surgeons, for the past two or three years, has been to elevate the plane of fracture results through the agency of district meetings; and the collecting of clinical data referable to fractures and fracture management. It is hoped from this mass of data that ultimately the treatment of fractures will be more nearly standardized; this will result in much benefit. From this activity alone, we may deduct that there is a need for improvement in our fracture results.

METHODS OF TREATMENT

Generally speaking, there are three methods of treatment of fractures of the shafts of long bones:

First, plaster of Paris or other methods of splinting;

Second, traction and suspension.

Third, open operation and internal fixation.

"There is no royal road to success," competent men secure favorable results by any of these methods. It is certainly not our purpose to criticize any method; each possesses its particular advantages and disadvantages. It cannot be held that all fractures of the type under consideration can be best treated by any one method alone. To best serve our patients we should be thoroughly familiar and experienced with each method and if we then individualize our fracture cases and select that method best suited to meet the needs of the individual case, our end results will be improved.

The plaster method offers the advantage of greater movability, often allowing the patient to be up and about on crutches; this favors circulation and has a good mental effect on the patient, thus

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improving the general physical welfare; it is less time consuming, for when the cast is properly applied and hardened there is little else to be done until the time of its removal.

The disadvantages of the plaster method are: General anesthesia is usually required for reduction and application; if improperly applied, is useless or even detrimental, i. e., too often resulting in malposition, malalignment, or ischemic paralysis. It affords no possibility of effecting any change indicated by the radiograph; and makes necessary the replacing of the entire cast if a minor change is desired. It is not practical in presence of wounds of the soft structures. It favors joint stiffness and tissue atrophy from nonuse.

It is generally agreed that the third method, the open operation should not be undertaken until all conservative methods have failed, or in the presence of such factors as make it evident, at the onset, that such measures will fail.

The second method, traction and suspension, has the disadvantages of, confining the patient to bed until fixation by callus is effected; less finality than that of plaster for the mechanical devices, and adjustments are at the mercy of the doctor, nurse, orderly, or patient; requiring a high degree of mechanical skill and a comprehensive knowledge of traction principles in its application and maintenance; also it is time consuming and requires much in the way of patience, persistence and ingenuity.

ADVANTAGES OF SKELETAL TRACTION

Some of its advantages are: Usually no general anesthesia is required; the patient is more comfortable; a greater freedom of movement and attention to personal needs is allowed; it permits frequent inspection and mensuration of the affected limb; more frequent x ray records of progress; easy correction of minor defects in apposition or alignment; earlier movement of joints; and permits massage and physiotherapy, thus lessening the final disability due to nonuse.

Skeletal traction when applicable affords the most ideal method of effecting extension.

Referable to its advantages, permit me to quote from a former article (1) on fractures, as follows:

"In nearly every fracture case, four major elements must be considered vis: approximation, alignment, function and pathology of soft parts.

"In the event of failure to any degree of the older methods of treatment, attention is naturally directed to some of the newer methods in effort to avoid open operative treatment with its attendant special risks and responsibilities. It is here that suspension and skeletal traction will be found to afford a far wider application than it has enjoyed in the past.

"It should be remembered that 'the inherent value of any apparatus is of less importance than the skill with which it is used,' hence, then, we may be able to turn evident defeat in many cases into victory by the skillful use of the Balkan frame, Thomas splint, suspension and skeletal traction with the Steinmann pin or modified tong device, without an open operation.

"These methods of extension seem barbaric to one who has not used them but in practice they are much more comfortable to the patient than any other method in which a considerable amount of weight has to be continually applied as the traction is directly on the non-sensitive bone instead of the sensitive skin.

Steinmann (2) pointed out the objections to skeletal traction and their avoidance as follows:

"First: Pain—If the skin is pulled up forcibly when the pin is inserted there will be no skin pain or decubitus.

"Second: Infection.—The skin should receive careful attention and preparation to avoid sepsis. The pin should not be introduced in a hematoma about the fracture, in the marrow cavity of the bone or a joint cavity, nor in the epiphyseal line."

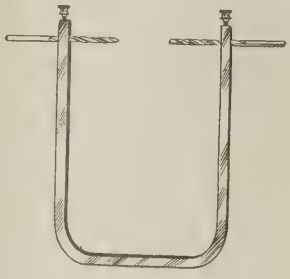

FIG. 1.—Skeletal tractor (James).

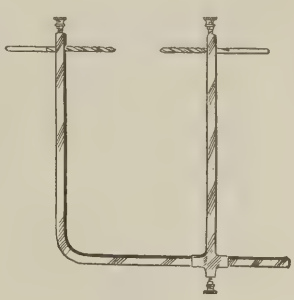

FIG. 2.—Skeletal tractor, adjustable (James).

Skeletal traction is a safe procedure if proper technic is employed, because its limited site of attachment is of great value in the presence of extensive abrasions, or compound fractures with much destruction of the soft parts; also in multiple fractures especially where proper alignment is difficult to secure. Extension at the beginning of treatment should provide an overpull to lessen the fixation of injured muscles in a shortened condition.

Suspension and traction afford early and frequent mobility to the adjacent joints. The benefits of passive motion can be secured from the beginning of the treatment. The apparatus lends itself to easy manipulation in providing the desired position and extension. It allows the patient to vary the elevation of the limb to suit convenience and comfort, and affords the maximum amount of freedom in bed. It gives greater facilities for checking the progress results by radiographs and there is less interference with circulation, less edema, annoyance, pain and discomfort. It permits increased facilities for personal cleanliness, therefore the nursing care of the patient is rendered much easier.

Blake (3) stated, "Skeletal traction is the most perfect method by which traction can be made upon the femur because it permits the placing of the limb in an absolutely correct position, and acts directly upon the fragments without fixing or injuring the knee. With it, a weight of six kilos produces as much effect as fifteen kilos attached by ordinary adhesive bands. The objection to it is the fear of infection at the site of the pin or tongs, but present experience seems to prove that the tongs at least may be employed with impunity."

Skeletal traction by pulling upon the bone direct is far more efficient than is plaster skin traction and

its application is not restricted by blebs, abrasions, contused skin and open wounds. It can be applied immediately with maximum traction force, in order to secure reduction of the fragments at a most opportune time, before muscle infiltration, rigidity, and retraction occur. These advantages cannot be so easily secured by adhesive plaster because of slippage.

Skeletal traction should be removed as soon as the fragments are firmly held by callus and may be supplanted by plaster or splint until final union is secured.

In the application of skeletal traction many devices have been offered, from the transfixing pin as advised by Cordavilla (1903) and by Steinmann (1907), to the complicated types of tongs, clamps, and other devices, many of which are good and all possess points in their favor.

After considerable experience with the various types of skeletal tractors, I have devised a simple instrument which has proved entirely satisfactory and effective. In the accompanying photograph (Fig. 1) it will be noted that this skeletal tractor is a three eighths inch square steel bar, shaped to a clevis or U shape, carrying at each open end a No. 20 drill bit, at exactly right angles and securely fastened in position by milled head setscrews, thus rendering the entire apparatus rigid. Fig. 2 shows the same instrument with an adjustable feature, making but one instrument necessary for the various sized limbs, otherwise the principle is the same as Fig. 1.

This skeletal tractor offers the advantage of simplicity in its construction and application.

TECHNIC OF APPLICATION

The skin area is iodinized; the local area is anesthetized by novocaine solution, extending in depth to the bone; the skin is held taut opposite to the line of traction; with a small tenetome, a one fourth inch incision is carried directly down to the bone and a No. 20 drill bit is inserted through the tractor arm and set in the bone to the desired depth; likewise another drill is inserted on the opposite side; the two drills are fixed in rigid position by the set screws; then a gauze dressing is placed around each drill for wound protection and the procedure is complete.

The grooving on the sides of the drill acts as a drain from the bone. The drills being rigidly fixed at right angles, afford security against slippage or undue penetration.

Ample strength is afforded for traction applied by small sash cord secured in the center of the base of the U by adhesive plaster. This right angle fixation permits rotation of the skeletal traction, on its fixation point in the bone, and if a lateral change in traction angle is desired the sash cord may be fixed to either side of the center of the base of the U, or if desired, other lines of supplementary traction may be easily secured.

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Some Observations on Eastern Clinics*

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It was my pleasure to spend some time in several of the Eastern and Midwestern hospitals recently.

CLINIC OF DR. JOHN B. DEAVER

When in the East, I never miss an opportunity to visit the clinic of Dr. John B. Deaver. Notwithstanding the fact that Dr. Deaver is around seventy years old, he is still doing more work than any man I have ever seen in action. Dr. Deaver is surrounded by a group of extremely capable young men, and every case in his clinical material is thoroughly worked up before coming to operation.

If one has not been in this clinic for two or three years he will notice that Dr. Deaver is doing more radical work in dealing with ulcers of the stomach than formerly, especially in dealing with crater ulcers, and he is doing more conservative work in dealing with ulcers of the duodenum, and focal infections in the cecum and colon. Dr. Deaver, as well as other surgeons who have had a wide experience in work along the lines of that advocated by Mr. Lane of England in cases of focal infection in the sigmoid and colon, admit that their results from the radical procedures have been disappointing in many cases, and much of this work has been abandoned.

The first case presented for operation in Dr. Deaver's clinic was a case of intestinal obstruction. The case was of special interest to me in view of the fact that the patient had been operated upon three weeks previously for a "carcinoma of the duodenum." A resection of the pyloric end of the stomach and as much of the duodenum as possible had been done at that time, also a posterior gastroenterostomy. This case was particularly interesting because of the fact that clinical experience has demonstrated that malignancy of the duodenum is extremely rare.

The findings of the second operation revealed considerable leakage of bile, greatly distended intestines, and a band of adhesions across one loop of the small intestine, the latter being the immediate cause of the obstruction. In commenting on this case Dr. Deaver emphasized the fact that he had "saved many lives by promptly reopening the abdomen follow laparotomies, where definite symptoms of obstruction followed within a few days or a few weeks." In connection with the causes of intestinal obstruction and

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acute abdominal conditions, Dr. Deaver gave an analytical clinical talk on this subject. He gave acute abdominal conditions the following order of frequency in his experience:

Acute appendicitis
Perforated peptic ulcer
Acute salpingitis
Acute intestinal obstruction
Ruptured extrauterine pregnancy
Acute pancreatitis
Acute hematogenous infection of the kidney
Twisting of the pedicle of an ovarian cyst
Acute diverticulitis
Mesenteric thrombosis, and other conditions.

The points which Dr. Deaver emphasized most strongly in making a differential diagnosis was, first, a thorough clinical study based on a careful case history; and second, a careful anatomical study of the case. In this connection he emphasized the fact that such a study will, in the majority of cases, lead to a proper diagnosis, and will, therefore, result in early operative treatment, and avoid many disastrous results, traceable to delays in administering the proper treatment.

He emphasized the fact that a higher mortality of "the acute abdomen" is due in part to a lack of an intimate knowledge of living surgical pathology, and in part to too great a reliance on laboratory findings which do not always correspond to the operative findings; and in the third place, too long a delay in adopting the proper operative treatment instead of pursuing the socalled conservative method.

In connection with his work in jaundice cases Dr. Deaver emphasized strongly the great importance of a careful study of all organs from both a physiological and pathological viewpoint before operation, and insisted that this examination should include especially the determination of heart, kidney, and liver functions, the blood pressure, coagulation time, chemistry, Wassermann test and other findings. In his preliminary treatment in these cases of jaundice, of whatever nature, he insists not only on the administration of calcium lactate intravenously, but glucose and in some cases insulin, with or without glucose, for three or four days before operation. In this connection, the importance of watching for acidosis following operation, and the proper followup treatment, was also emphasized.

CLINIC OF DR. GEORGE W. CRILE

The next clinic visited was that of Dr. George W. Crile. Dr. Crile's clinic, like that of Dr. Deaver's, is always a source of great inspiration, as well as of information.

His method of dealing with cases of goitre is unique, and his technic is typical of the man. With the exophthalmic goitre cases Dr. Crile is one of the men who recognized clearly the importance not only of dealing with these patients from the viewpoint of physiology and pathology, but recognized the importance of dealing with them from a psychological viewpoint. His goitre patients are given the necessary amount of rest treatment in bed, and in those in whom he feels that it is indicated, he even has gas administrated in small quantities one or more mornings before the actual date set for operation, in order to get his patient accustomed to the ordeal. This, of course, is done only in cases where gas anesthesia is administered.

Much of Crile's goitre work is now done under local anesthesia. Since the introduction of the iodine treatment in the form of Lugol's solution prior to operation, pole ligations are seldom indicated in his clinic. The anesthesia most used in this clinic is novocaine, or a combination of novocaine and nitrous oxide and oxygen. Ether is comparatively infrequently used in this clinic, and ethylene, never. All goitre patients are operated on in their own bed in their private rooms, instead of being taken to the operating room.

In connection with his talk on goitre operations, Dr. Crile referred to the fact that recently an Austrian anatomist had worked out the minute anatomy of the various branches of the recurrent laryngeal nerve crossing the trachea. For a number of years Dr. Crile has recognized this fact emphatically, and has strongly advocated leaving some thyroid tissue on the front of the trachea and not denuding it entirely of thyroid tissue, for the reason that he asserted such procedure would result in greater discomfort to the patient by a greater intratracheal accumulation of mucous.

In connection with the work on gastrointestinal surgery, Dr. Crile emphasized the fact that his views do not coincide with those of many surgeons in Europe on the treatment of gastric and duodenal ulcers, especially in the stand which is being taken very extensively on the Continent in carrying out extremely radical measures in treating both gastric and duodenal ulcers. Dr. Crile emphasizes strongly that his experience with the conservative treatment of chronic crater ulcers in the lesser curvature of the stomach has been disappointing. He states that his experience has been that a crater ulcer of the lesser curvature of the stomach calls for a radical operation; that is, a partial gastrectomy, followed by a gastroenterostomy. He does not, however, recommend such radical procedure in the case of simple ulcers.

In dealing with carcinoma of the sigmoid and rectum, Dr. Crile stated that many inoperable cases had come to his clinic, all of which he had referred to the radiological section for x ray and radium treatment. He stated that the results had been so good, in some cases, that he had been referring more and more of the borderline cases for the radiation treatment, and that the results had been far better than he had originally anticipated. (In this connection, he stated that his results from x ray and radium treatment had been so favorable that in case he should develop a carcinoma of the rectum himself, he should consider very seriously the use of this form of therapy instead of surgery.)

DR. OCHSNER'S CLINIC

Dr. Oschner's Clinic. Each time I have had an opportunity of visiting Dr. Oschner's clinic (and that has been once a year for a number of years), I have been more and more impressed with the originality of this operator, and the many evidences of his conscientious work. Dr. Oschner, as in the case of the other men referred to, has always been insistent upon each case being carefully worked up and properly prepared before the patient is brought to operation, and after the patient comes to operation, his practice has always been to eliminate all pathological conditions, if possible, at the time of operation.

One of the patients operated upon in his clinic during my visit was a splendid illustration of this

fact. The patient had a celiotomy. An ulcer of the duodenum was found and a posterior gastroenterostomy was done. The gallbladder was examined and found to be pathological. A cholecystectomy was done. The appendix was examined and found to be thickened and adherent. An appendectomy was done. It was noted that a much greater engorgement of the veins of the stomach and transverse colon was present than he had been able to explain. The liver was examined and found to be more or less enlarged. This still did not explain satisfactorily the venous engorgement, and the spleen was explorated and found to be about three times normal size. He stated that this was a case of beginning of Banti's disease, and at the same operation did a splenectomy. Space will not permit of further clinical observations.

Since this, Dr. Oschner has died, as you all know. We, among his numerous admirers, miss him greatly.

THE MAYO CLINIC

In addition to the great volume of clinical work which is being carried on in the Mayo clinic, the thing that we naturally are always greatly interested in is the extensive research work which is being carried on in every department of this clinic. This is indeed an outstanding feature of the clinic. To the research department of this clinic is due the credit for some great advances in medical science during the last few years. One of the outstanding advances which has resulted from the research work done on the secretions of the thyroid gland has been the discovery of thyroxin by Plummer and Kendall. The work of Mann and his coworkers, on the liver functions, has also been recognized as of great importance and as a definite step in advance.

The staff of the Mayo clinic is very unique in the fact that there is such great unanimity in the cooperation of departments; in fact, it can be looked upon as one great unit, and the influence which has made this possible is one of the great factors in making this one of the greatest clinics in existence.

At the Mayo clinic one is always greatly impressed with the enormous number of goitre cases presenting themselves for treatment, and in this connection we are also impressed with the progress which has been brought about from year to year in the treatment, especially of exophthalmic goitre cases: and the research department of the Mayo clinic is entitled to its share of credit for this advance which has been made. No longer than three years ago one observed many cases of far advanced exophthalmic goitre, whose conditions were so critical that nothing more than a pole ligation was possible. The work of Plummer, Kendall and others has materially modified this procedure. At the present time, by the prolonged rest treatment and the use of Lugol's solution, pole ligations have been practically eliminated.

The surgical staff at this clinic are not in accord with the radical procedures which have been carried out in the European clinics of late years in dealing with gastric and duodenal ulcers. This is particularly true in dealing with simple ulcers of the stomach and duodenum—more especially of duodenal ulcers. Dr. William J. Mayo and other members of his staff emphasize the fact that, "eighty-five per cent. of simple uncomplicated gastric ulcers are cured by excision and gastroenterostomy, and that ninety-four per cent. of cases of duodenal ulcer are cured by gastroenterostomy and excision when indicated." They insist that "a radical resection of two thirds of the stomach in uncomplicated cases, as is now being done by many surgeons in Europe, is not justified." They do, however, recommend, and are doing partial gastrectomy followed by gastroenterostomy in cases of large crater ulcers, especially in the lesser curvature of the stomach. Dr. Charles H. Mayo, Dr. Balfour, and Dr. Judd call attention to the fact that "there is a recurrence of gastric ulcer following gastroenterostomy in about two per cent. of cases," but they insist that such a recurrence in two cases out of one hundred does not justify the additional risk of sacrificing two thirds of the stomach as a routine, where nothing more than a simple ulcer exists.

The procedure followed in the Mayo clinic in the case of pathological gallbladders is not different from that followed in other clinics. All diseased gallbladders are removed, unless there is a definite contraindication for the same at the time of operation.

The intravenous injection of salts for visualization of gallbladder has been given up at this clinic, because of the severe reactions following its use. It is asserted, however, that the administration of the salts by mouth is giving practically as good results as the intravenous administration formerly gave. Attention is called to the fact that the visualization of the gallbladder does not show the actual pathological condition present.

Narcosis by Ethylidene Chloride, Methylene Chloride and Their Mixtures

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The power of anesthetics, as a result of their complicated physicochemical molecular combinations with the substances of the protoplasm, essentially depends not only upon the physical and chemical properties of different anesthetics and their mixtures, but also, to a great extent, upon their composition and their combinations with substances acting similarly upon the animal body.

The depth and duration of narcosis are also greatly influenced by the boiling point of an anesthetic or mixture of several anesthetics. The lower the boiling point, as compared to the temperature of the body, the more rapid its evaporation, and the easier its absorbability by the body, the prompter its exhalation by the lungs and, according to Schleich's opinion, the more unfavorable its influence on the respiratory

organs. On the other hand, substances having a high boiling point are not so easily absorbed, remaining in the body for a longer time, and therefore may in the course of continued narcosis cause a deleterious amount of such substances to collect in the body.

If the boiling point of a substance coincides with the temperature of the body, it must be freely exhaled during the act of respiration; substances, evaporating at a temperature lower than that of the body, get into the lungs in a state of intense steam; with substances having a high boiling point, a quantity of it, corresponding to the coefficient of evaporation, will be given off by the body through the lungs at each exhalation.

Consequently, substances with a lower boiling point will produce more rapid, though less protracted narcosis; substances with a higher boiling point will act more powerfully, and with greater duration, but the anesthesia caused by them will set in more slowly.

Thus, depth of narcosis depends on the rapidity with which the anesthetic is eliminated from the body.

A substance with a high boiling point, as, for instance, chloroform, is not entirely expelled by exhalation—a part of it remains in the body, increasing in quantity and power on repeated exhalation. It is difficult for the body to get rid of it, owing to the slow evaporation of the substance, a consequence of which is the danger of overdosing, due to its collecting in the body—a state of things not observed when administering substances with low boiling point. These latter, on the contrary, when in a state of overheated fumes, and, consequently, under increased pressure, are rapidly and violently exhaled by the lungs, causing harm to the tissues during the process. But if narcotic substances are used, the boiling point of which is considerably lower than the temperature of the body (ethyl chloride, with boiling point 12.5° C.) a very brief sleep is obtained which cannot be made deeper even by increased dosing.

REQUIREMENTS OF AN ANESTHETIC

The principal requirements of an anesthetic are the following: 1. To suppress entirely conscious sensibility; 2, to have no deleterious action on the blood circulation and respiration, and 3, to be rapidly expelled from the body.

One of the principal conditions is, on the one hand, the absence in an anesthetic of the chlorine, bromide, iodine group, or their presence in quantities not sufficient to provoke the failure of efficiency of the heart or respiration; and, on the other hand, a higher boiling point than that of ether and a lower one than of chloroform, and best of all, as experimental observations show, a boiling point between 45° and 55° C.

In studying several less known anesthetics of the fatty series, and guided by the considerations mentioned above, I have chosen a combination of two substances, each of which contains a lesser quantity of chlorine than does chloroform, acting on the blood circulation and on respiration less oppressively than does chloroform, and having a boiling point higher than that of ether, but lower than that of chloroform—ethylidene chloride and methylene chloride. Ethylidene chloride and methylene chloride are colorless liquids smelling of chloroform. Ethylidene chloride (CH_3—$CHCl_2$) was first discovered by Regnault and analyzed by Wurtz, 1857, Genter, 1858, and Beilstein, 1859. It was used as an anesthetic in 1870, being proposed by Liebreich.

Chloridene, ethylidene chloride is produced by the treatment of ethan or ethan monochloride with chlorine (Regnault). It is also to be obtained by the treatment of acetaldehyde with chloride of phosphorus, Beilstein, of phosgen with acetaldehyde, of acethylenate copper with condensed hydrochloric acid, Sabaneieff, and as a byproduct in obtaining of choral.

Ethylidene chloride is a liquid insoluble in spirits of wine, ether, chloroform or oils; its specific gravity being 1.204; it has a lower boiling point than that of chloroform, viz.: 58° to 60° C.

Ethylidene chloride contains per 100 parts: C: 24.24; T: 4.04; Cl: 71.72, while chloroform: Cl: 10.04; H: 0.84; Cl: 89.12.

Ethylidene chloride while not inferior to chloroform in rapidity of action, acts more gently on the circulation of the blood than chloroform, while exceeding the latter in rapidity of awakening.

Methylene chloride (CH_2Cl_2); specific gravity, 1.346, was obtained in 1840 by Regnault, analyzed in 1867 by Richardson. Methylene chloride is obtained by the treatment of methane, ethane, monochloride, methyl, methylene, iodide with chlorine, and by treating an alcoholic solution of chloroform with surplus of powdered zinc with an addition of a small quantity of ammonia, Perkin. The boiling point of methylene chloride is 41.5° C. It contains per hundred parts: C: 14.12; H: 2.35; Cl: 83.53.

EXPERIMENTAL WORK

Experiments for establishing the effects upon animals of chloroform, ethylidene chloride, methylene chloride and their mixtures, in which ethylidene chloride and methylene chloride were taken in different proportions, have been carried on by me at the Pharmacological Institute of the Moscow University.

Mixture No. 1. Ethylidene chloride 1 part + methylene chloride 1 part. Specific gravity = 1.228, boiling point 50.5° C. There are 77.62 parts of chlorine to 100 parts of the mixture.

Mixture No. 2. Ethylidene chloride two parts + methylene chloride one part, specific gravity = 1.210; boiling point 52° C.

There are 74.90 parts of chlorine per 100 parts.

Mixture No. 3. Ethylidene chloride one part + methylene chloride two parts, specific gravity = 1.239; boiling point 47° C.

There are 78.80 parts of chlorine per 100 parts.

The experiments were made on dogs, the animals being previously weighed. Experiments were carried on as follows:

After prelminary tracheotomy the animals were given to inhale a narcotic liquid out of a flask, a capacity of about 200 grains, with a wide mouth into which were inserted two bent glass tubes; one of them was attached to the animal's trachea, and the other, lowered almost to the level of the anesthetic, communicated by its other end with the air. In this way the animals inhaled the narcotic directly into the trachea; to determine the pressure of the blood the carotis sinistra or femoralis sinistra were attached to a manometer; the breathing movements and blood pressure were registered in seconds on the smoked tape of a kymograph. Experiments were first made with chloroform, ethylidene chloride and

methylene chloride and afterwards with ethylidene chloride methylene chloride mixtures.

The experiments with chloroform once more showed how painfully animals bear chloroform's narcosis. The first drops of chloroform evoke a state of violent agitation: we have deep, abrupt sighs, jerky movements, spasmodic contractions; the excitement begins to abate some minutes later, the reflexes diminishing, the blood pressure failing to 31.6 per cent to 68.1 per cent, and a state of complete narcosis finally setting in. Later the dose of chloroform being increased the blood pressure falls considerably, irregularity of the cardiac rhythm, stertorous breathing setting in and finally a complete cessation of breathing movements.

Experiments with methylene chloride and ethylidene chloride have shown that dogs bear them better than chloroform, and although the period of excitement caused by the drugs mentioned is not shorter than that of chloroform, the blood pressure and respiration, especially with ethylidene chloride, are not noticeably slackened during narcosis. But on administration of even inconsiderable doses of chloroform, the respiration and blood pressure begin to relax and on an increased dose of chloroform being administered to a dog a cessation of breathing movements takes place and death ensues rapidly, with an abrupt lowering of the blood pressure. In the experiments with chloroform the blood pressure during the cessation of reflexes fell an average of 31.6 to 68.7, while with methylene chloride the blood pressure during cessation of reflexes fell to 17.5 to 28.5 per cent., and with ethylidene chloride to 27 to 29.3 per cent. With chloroform the blood pressure fell to 68.8 to 76.3 per cent. by the end of narcosis, the breathing grew slower and finally ceased, while with methylene chloride and ethylidene chloride, in spite of the administration of a considerable quantity of the narcotic, the breathing did not grow slower till the end of the experiment; with methylene chloride the blood pressure towards the end of experiment fell on an average to 52.2 to 58.7 per cent., and with ethylidene chloride only to 31.7 to 37.7 per cent.

Experiments with mixtures 1 and 2 having proximate boiling points, mixture No. 4 boiling point, 50.5°, and mixture No. 2 boiling point, 52° have shown their favorable action on the blood circulation and respiration, as compared to the action of chloroform, methylene chloride and ethylidene chloride respectively.

The period of excitement caused by these mixtures is inconsiderable as compared to chloroform, pure ethylidene chloride and methylene chloride. On inhalation of these mixtures the reflexes soon begin to abate, a weakening of muscular tone sets in, and complete narcosis ensues, now kept up by inconsiderable doses of the drug; after ceasing to inhale mixtures No. 1 and 2 the reflexes return and awakening sets in quite soon (in two to four minutes) without being followed by any undesirable aftereffects. With chloroform the blood pressure falls noticeably on comparatively small doses being administered; breathing is slackened and death finally sets in from paralysis of the respiratory centres. With narcosis by ethylidene chloride and methylene chloride mixtures the blood pressure and respiration did not noticeably slacken during the whole narcosis period which lasted longer than with chloroform, although a larger quantity of the narcosis was administered. Narcosis by means of mixture No. 1, ethylidene chloride and methylene chloride in equal relations of volume, boiling point 50.5°, being especially well borne. With mixture No. 1 narcosis sets in rapidly, being easily kept up by small quantities of the drug; on inhalation ceasing awakening sets in sooner than with mixtures No. 2 and No. 3, the blood pressure and respiration having but inconsiderably slackened. Whereas blood pressure under chloroform falls on an average to 31.6 per cent to 68.1 per cent, during the cessation of reflexes, it falls to 5.4 to 12.8 per cent with mixture No. 1, and to 9 to 18.1 per cent with mixture No. 2, by the end of the experiment. The blood pressure with chloroform fell to 68.8 to 76.3 per cent.; with mixture No. 2 to 38.5 to 50 per cent. and with mixture No. 1 only to 22.6 to 28.7 per cent.

During narcosis produced by these mixtures, the breathing did not slacken, although a greater quantity of the narcotic was administered than in the case of chloroform.

Experiments with mixture No. 3, two parts of methylene chloride and one part of ethylidene chloride, boiling point 47°, have shown that, although having advantages over chloroform, it is inferior to No. 1 and No. 2; with mixture No. 3 breathing and blood circulation slacken sooner than with the first two mixtures which probably depends on the greater quantity of chlorine entering into the composition of mixture No. 3 as compared to the first two mixtures. Whereas with mixture No. 1 the blood pressure fell to 27.2 per cent by the end of the experiment (the experiment lasting one hour) twenty-eight grain of mixture No. 1 being used, 22.6 per cent, twenty and a half grains being used, and 28.7 per cent, thirty-five and a half grains used, it fell to 34.1 per cent with mixture No. 3, fourteen and a half grains of mixture No. 3 used, to 44.8 per cent, twelve grains of mixture No. 3 used, and to 72.9 per cent, nineteen grains of mixture No. 3 used.

The period of excitement with mixture No. 3 is longer and awakening does not set in so quickly as with mixtures No. 1 and No. 2; the experiments with the two latter once more confirming the importance of the boiling point of a narcotic or mixture of narcotics, it being especially favorable to narcosis for the boiling point of the narcotics to be between 45° and 55° C.

CONCLUSIONS

After experimental observations on narcosis of animals by ethylidene chloride, methylene chloride and their mixtures we may draw the conclusion that both of these haloid producing methane, while not inferior in narcotic power to chloroform, exceed the latter in point of rapidity of the awakening. And farther, while exercising a less paralyzing effect, as compared to chloroform, on the respiratory and vasomotor centres and on the heart, they also act less depressingly on blood circulation. Mixtures of ethylidene chloride and methylene chloride are preeminently deserving of attention, narcosis with mixture No. 1 being especially well borne.

Narcosis administered to human beings by the mixtures proposed by myself have yielded most favorable results.

Instruments, Apparatus, and Clinical Notes

SUBMUCOSA DISSECTOR*

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Chicago

This instrument is designed to facilitate exact dissection in those procedures in which habit has led the operator to use the end of the scalpel handle, or scissors, instruments which, obviously, are not uniform in size, shape, or degree of sharpness.

In devising an instrument to clear or expose the submucosa we must clearly recognize three facts, viz.:

1. That when the alimentary tube has been macerated for fourteen hours and scraped, there remains

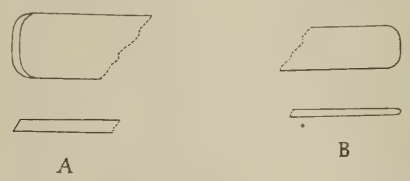

Fig. 1.—The ends of the instrument. Point A (large end) is beveled and the long edge, properly dulled, is directed against the leatherlike submucosa to scrape it clean without cutting. This is the novel feature in its use.

Point B. (small end) is a spatula dissector 7-32 of an inch wide with dulled end and rounded corners thus avoiding cutting, and facilitating finding the easiest cleavage plane. It also may be used in lifting the peritoneum from the ureter or separating adhesions.

a tissue, leatherlike in consistency, which is the skeleton structure supporting and connecting all the coats of the intestinal wall.

2. In cutting into the bowel wall from the peritoneal side the mucosa and its intimately associated submucous coat everts, or slides over the edge and protrudes around over the peritoneum—eversion of coats.

3. The zone of tissue which is lax enough to permit this sliding or eversion of coats is the loose connective tissue of the submucous layer immediately adjacent to the circular muscle. Since tissues of this zone are chiefly connective in function with no large vessels or nerves it is the natural plane of cleavage of the bowel wall separating the muscles and peritoneum from the subjacent submucous and mucous coats.

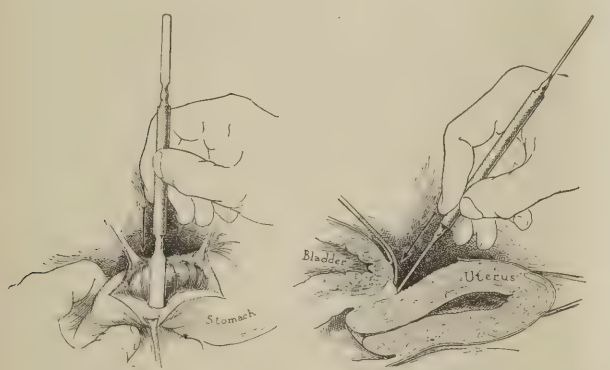

Fig. 2 Fig. 3

Fig. 2.—Showing the use of the instrument in congenital pyloric stenosis. Point A directed against the submucosa removing the hypertrophied pyloric sphincter muscle. Its dull edge will not perforate the duodenal submucosa.

Fig. 3.—Use of instrument in hysterectomy. The edge of point A is directed against the hard uterine muscle tissue thus avoiding injury to the peritoneum and bladder wall.

*From the Department of Surgery, College of Medicine, University of Illinois.

Fig. 4 Fig. 5

Fig. 4.—Point B, splitting the bowel wall in enterostomy.

Fig. 5.—Showing use of instrument in cholecystectomy. Point B, separating the gallbladder from its bed and isolating the cystic duct. The clamped cystic duct has been rotated to the left thus exposing the vessels for ligation before they have pierced the gallbladder walls, and while these vessels are still subperitoneal only and easily accessible. Point A is used from above down to clear the gallbladder of liver tissue.

The present instrument in a manner comparable to the back of a knifeblade readily separates the wall at this plane, where eversion of coats takes place.

A NEW RELOADING NEEDLE FOR THE IMPLANTATION OF RADIUM EMANATION IN CAPILLARY GLASS TUBES

Paul E. Durham, M.D.
New York.

The trend of radiology clearly indicates that the future will depend on the development of the technic of implantation of radium emanation in capillary glass tubes. But as the marksman must depend on the accuracy of his shooting iron, so must the radiologist be supplied with an implant needle free from mechanical faults. The following is a description of a new needle devised and used by myself to overcome the objectionable features possessed by other implantation needles so far in use.

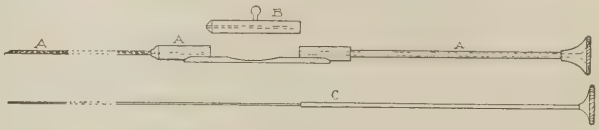

Fig. 1.—The hollow needle.

Fig. 1 illustrates the hollow needle, A, with cartridge B loaded with a radium seed ready to take its position in the chamber of barrel A, while C is the plunger used to force the seed from B through the barrel A and expel it at the needle point into the tissues.

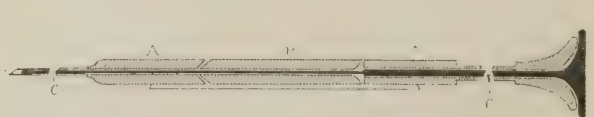

Fig. 2.—A schematic sketch of the needle with the cartridge in place.

Fig. 2 is a schematic sketch showing the needle complete with the cartridge in place which is pre-

vented from being removed by the plunger being driven up. The plunger C must be withdrawn beyond the cartridge B before this cartridge can be removed for the reloading of the following one.

Fig. 3A shows a cross section of a cartridge

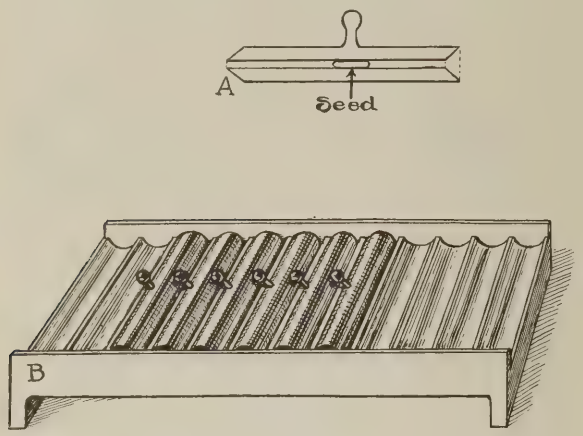

FIG. 3.—A, cross section of cartridge with a capillary glass tube ready to be placed in rack B.

loaded with a capillary glass tube of radium emanation ready to be placed in the rack 3B for sterilization by boiling preparatory to implantation or transportation to the place of operation.

Each cartridge is so made that the concave cone at the upper end acts as a guide to the plunger entering from the needle stock A while the convex cone at the distal end is in apposition with the upper end of the needle barrel A, this forms an uninterrupted channel for the route of the seed.

Fig. 4 illustrates the correct method of introducing several reloading needles in parallel and ordinarily about one centimetre apart with a subsequent deposit of seeds three quarters to one centimetre apart in the puncture channel left on withdrawal of the needle.

The cartridge, loaded with a bare glass tube of radium emanation, is placed in the chamber of the needle which has been inserted to the desired depth in the tissues. The plunger is forced forward expelling the seed at the needle point, the plunger is withdrawn

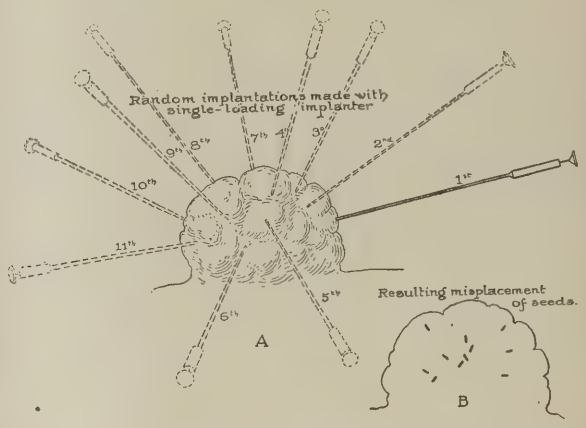

FIG. 5.—Faulty implantation resulting from the use of a single loading implant needle.

and the empty cartridge is removed, another loaded one is slipped into place, the needle is withdrawn about one centimetre and the plunger forced forward expelling a second seed in the puncture channel, etc.

Needle 3 in diagram 4B has been withdrawn the proper distance and the loaded cartridge is being introduced for the implantation of the last seed.

By the introduction of several needles at a time in a specified section of the neoplasm the operator is aware of the relation of the inserted needle points and thus avoids "bunching of seeds" or the deposits of them sparsely or not at all in other sections of the growth. This faulty implantation of a tumor involvement occurs when each seed is deposited by the insertion of an individual needle or "single loading

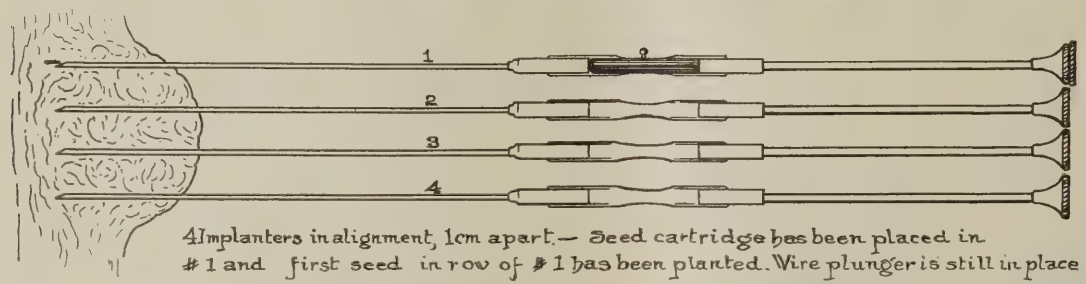
1
2
3
4
4 Implanters in alignment, 1cm apart.— Seed cartridge has been placed in #1 and first seed in row of #1 has been planted. Wire plunger is still in place

Fig. 4-A

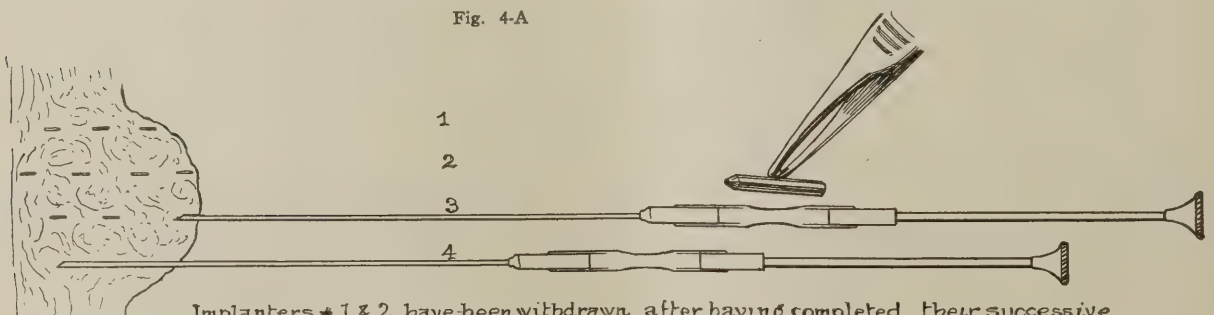
1
2
3
4
Implanters #1 & 2 have been withdrawn after having completed their successive implantations. Cartridge containing seed is being placed in implanter #3 for implantation of last seed in 3rd row.

Fig. 4-B

implant needle" as seen in 5A. Should the case call for the embedment of a large number of seeds (in some cases in the neighborhood of eighty or ninety), it is apparent that this greater number of needle punctures is accompanied by excessive trauma, hemorrhage, the more likelihood of introduction of infection slough and possibly serious sequelæ. A faulty distribution of seeds results in sections of the neoplasm and surrounding tissues receiving excessive radiation with a resulting necrosis while other parts will be mildly radiated and left to produce the socalled recurrence (Fig. 5B).

The length of the needle shank for ordinary implantation is ten to twelve centimetres. But different lengths may be attached to suit the case in hand as well as flexible needles for the introduction through instruments more particularly the cystoscope. Several needles with two dozen cartridges are a practical working set.

The history of implantation needles is a brief one. Duane is credited with having been the first to suggest this method of burying radium emanation confined in small capillary glass tubes in the substance of the neoplasm. The deposit of each seed in the tissues required a separate puncture by an individual needle. Flexible and curved needles were devised with various types of handles attached following this, but not until 1923, did anything new in the way of an improvement appear. Muir, at this time, described a needle in which the seeds were placed in a slot in the barrel. Although slot reloading needles are a great advantage over the single seed needle they do not fulfill all the requirements which are essential for implanting a large number of seeds accurately in quick time under adverse circumstances.

ADVANTAGES OF NEEDLE

Advantages of the reloading cartridge needle are: 1, uniform and equidistant distribution of seeds is obtained; 2, the time of implantation is reduced to one quarter or one fifth that required when other types of implantation needles are used—this is especially to be preferred in those cases where a general anesthesia is used; 3, the trauma from the use of the reloading needle is reduced on the average from one quarter to one fifth that produced by the single loading needle; 4, the action is automatic, there is no jamming of seeds (the cartridges are either loaded and sterilized previous to the beginning of the operation or are loaded on a side table by the assistant after they are emptied); 5, there is no chance to drop "live seeds" into the abdomen or other vital locations while reloading; 6, there is no hindrance to implantation when fluid from a cavity or blood from vessel puncture returns through the needle; 7, the more inaccessible neoplasms are implanted with less difficulty; 8, all parts of the instrument are easily sterilized; 9, the metal of the cartridge acts as a filter to protect the radiologist's hands from accumulative radiation effects.

REFERENCES

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11 EAST FORTY-EIGHTH STREET.

AN AUTOMATIC TRANSFUSION APPARATUS MADE FROM AN ORDINARY EAR DOUCHE*

SAMUEL GORDON BERKOW, B.S., M.D.
Perth Amboy, N. J.

So many automatic transfusion apparatuses have been devised lately that only special considerations prompt the present report. A very good automatic transfusion apparatus can be made from an ordinary return flow ear douche. Such an apparatus has even certain advantages over the expensive automatic transfusion apparatuses now on the market. It is of all glass construction and operates by means of a single ball valve, instead of by two such valves, as automatic transfusion apparatuses now sold possess. In addition to these advantages, the materials for the apparatus herewith described are readily obtainable

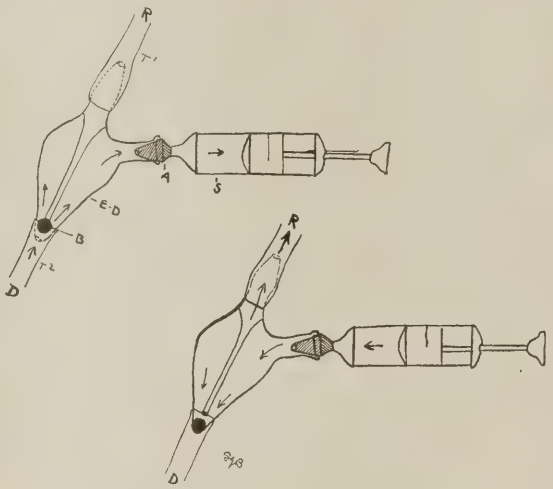

FIG. 1.—E-D, return flow ear douche; A, Luer-Record adapter; B, metal ball; S, 2 C.C. record syringe; T1, rubber tubing; T2, rubber tubing (catheter end)); D, donor; R, recipient.

everywhere; and it can be constructed very simply, in a few minutes.

In addition to the ear douche only a Luer-Record adapter and one ballbearing are required—beside the usual requirements for transfusion, i. e., a hypodermic syringe, two pieces of rubber tubing, needles or cannulas.

The aural end of a return flow ear douche is heated in an alcohol flame, or a Bunsen burner, until it is slightly drawn out. A glass bead or the metal ballbearing is dropped into this opening. The ball should fit loosely. The aural end of the ear douche is now flamed again, until it is drawn out one eighth inch below the metal ball, and the mouth of the tube is flamed until it is sufficiently closed to prevent the metal ball from dropping out. The chief precaution in making the apparatus is to flame the mouth of the ear douche evenly. The Luer part of the Luer-Record adapter is inserted into the outflow tube of the ear douche, and the surrounding glass is then flamed until the adapter is held tightly.

To the aural end of the douche, about six inches of rubber tubing is fitted; and a needle or cannula attached. This is to go to the donor. To the inflow

*From the Zelda Gordon Berlow Memorial Maternity Hospital.

end of the ear douche a similar piece of rubber tubing, with the needle or cannula, is attached. This goes to the recipient. To the Record adapter at the outflow tube of the douche a hypodermic syringe is fitted. This completes the apparatus.

TECHNIC

The action is as follows: When suction is made with the syringe, the glass or metal ball is raised, opening the tube leading from the donor, while it closes the small inner glass tube which leads to the recipient. When the syringe is emptied, the pressure forces down the glass or metal ball, closing the path to the donor, and leaving open the glass tube which leads to the recipient.

Ear douches are made in three sizes, small, medium and large; any size is suitable for transfusion. The size selected depending upon the diameter of the metal bearing which is available. The size of the syringe used varies with the size of the ear douche. With a large size of the ear douche a two c. c. syringe should be used; and with a smaller size a syringe of correspondingly *greater* capacity is advisable.

In using the apparatus it is best to have the recipient's arm at a somewhat higher level than the donor's. This can be accomplished by placing a pillow under the recipient's arm. Holding the apparatus in the left hand, with the needles or cannulas in place, it is filled with saline. By downward pressure of the syringe piston all air bubbles are expelled, and the rubber tubes to both donor and recipient are clamped with small "bulldog" clamps. The needles or cannulas are then inserted in the brachial veins of patient and donor in the usual manner. The clamps are removed, and the down stroke of the syringe piston is completed, injecting the saline. The transfusion then proceeds simply by pumping the syringe piston.

ADVANTAGES OF APPARATUS

The advantages of such an apparatus to the physician or surgeon (or small institution), who uses a transfusion apparatus only on rare occasions, and who may therefore be very reluctant to spend a large sum for an automatic apparatus, are obvious. But there are additional advantages. The blood which goes to the recipient is blood, *not from the syringe,* but from the glass barrel of the ear douche. The presence of air can therefore be detected far in advance of its passage to the patient. The single ball valve, instead of two, has the obvious advantage of simplification.

The long, narrow, inner tube, which provides a channel to and from the recipient, is a very great advantage. It further eliminates the risk of back flow from the recipient to the donor. Since luetic patients may need transfusion, this second precaution against back flow from the recipient (the first is the ball valve) is important.

Undoubtedly, improvements may be made in this apparatus by slightly modified special construction, better glass, etc.; but it is simply the purpose of this paper to show that a very good automatic transfusion apparatus can be made from an ordinary return flow ear douche, in a very short time and by very simple methods.

138 Market Street.

Arthroplasty Splint.—Paul N. Jepson (*Surgery, Gynecology and Obstetrics,* October, 1925) describes a splint used at the Mayo clinic which has proved very satisfactory after arthroplasty of the hip or knee. Immediately after the operation a Buck's extension is applied to the leg, and then a light cast or a posterior gutter splint. At the end of five days this is removed, and the arthroplasty splint, made of aluminum with a joint lock to prevent hypertension at the knee, is applied. To the upright footpiece is fastened a rope running over pulleys on the overhead frame, and to the rope is attached a six pound weight. This part of the apparatus prevents rotation of the leg on the thigh, or rotation of the thigh in the hip. A roller beneath the footpiece prevents friction on the bed clothing and operates on a short board placed on the bed. A Buck's extension is placed on the outside of the footpiece to permit continuous traction on the knee or hip. Straps are applied to the splint to hold it firmly to the extremity. Ropes are connected with a hand hold, so rigged that the patient, by pulling on it, can move the knee joint as often and as much as can be tolerated. After arthroplasty of the hip a special abduction Bradford frame is used in order to afford sufficient bed surface on which to operate the splint.

Elastic Adhesive Plaster.—Edward Lilienthal (*American Journal of Surgery,* September, 1925) describes an elastic adhesive plaster to take the place of the usual forms of adhesive plaster in securing compression and support. The new material consists of a rubber and cloth webbing with adhesive mass applied to one surface; it stretches more than double the original length. The author's first experience with this plaster was in cases of thoracoplasty after the external wound had healed but before the resected ribs had solidly united; even pressure was secured for as long as three weeks without change. Other uses have been in pleurisy, in fracture of the ribs, in cases of abdominal section where there has been distension, and as a support in visceroptosis. It has also been used for ambulant patients in suppurating wounds of the groin, as it does not prevent walking. It should not be used ordinarily in dressing fractures or in strapping sprained ankles.

The Kahn Precipitation Test.—William Levin (*Northwest Medicine,* December, 1924) tried out the Kahn test as a check upon the Wassermann in the laboratories of the Kansas and Oregon State Boards of Health and presents the following conclusions: 1. Parallel Kahn and Wassermann tests made on 2,542 blood specimens submitted to the Oregon State Board of Health Laboratory showed complete agreement in 92.2 per cent., fair agreement in 2.3 per cent., and complete disagreement in 5.5 per cent. 2. The Kahn test was more sensitive than the Wassermann test in 71 treated cases for which complete data was available. In this series 55 Kahn reacting tests gave 26 negative Wassermann tests, while 45 Wassermann reacting tests gave 16 negative Kahn tests. 3. In primary syphilis the Kahn test became positive practically at the same time as the Wassermann test. 4. Because of its simplicity and high degree of accuracy the Kahn precipitation test should be adopted as a routine test in the diagnosis and treatment of syphilis, supplementary to the Wassermann test.

Symposium on Preclinical Signs of Disease—II.

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Infections, Infectious Diseases, and Immunization*

WILLIAM H. PARK, M.D.
New York

My subject is a little out of the direct line of these lectures, but I am not responsible for that, and I am glad to have it in. I shall not speak of infectious diseases as forms of sickness in themselves, or of their direct effects on the heart, arteries, kidneys, nervous system and other parts of the body, for they are fully covered by other lecturers. I shall present the modern views regarding the value of sera and vaccines in preventing diseases.

You will realize that the two forms of the immunizing injections which we use are vaccines themselves, and sera from animals that have been vaccinated. The protective substances in the sera being from animals with different blood constituents from man, the immunity is not lasting. The antibodies in the sera that destroy the bacteria last only a few hours or a few days, while the antitoxin injected with the serum lasts a few weeks.

Vaccines are either living or dead. The first vaccine used was, as you know, the living virus of cowpox. This was a natural attenuated virus. Later the living virus of rabies and anthrax was deliberately attenuated by drying and heat, and later we began to use vaccines of dead bacteria, and the toxic substances produced by them in the media, so that the word vaccine passed first from the cowpox to the attenuated rabies and anthrax, and then simply to any inoculation which actively protects.

We all realize that in using vaccination for a definite disease, we necessarily must know the type of organism causing that disease, or that we have at least the same microbe; and a disease like diphtheria, or typhoid, or scarlet fever, or smallpox which is due to a single type organism is very much simpler to attempt vaccination in than a disease like lobar pneumonia, in which, although due to the pneumococcus in nearly every instance, is due to a number of types of pneumococci, and those types are so distinct that immunization against one type gives little protection against another type; and when we come to bronchial pneumonia, there we not only have different types of pneumonocci, but also streptococci, and a number of other organisms.

*Read at the New York Academy of Medicine, on January 8, 1925, as part of a symposium on preclinical signs of disease, under the auspices of the Medical Society of the County of New York.

So that when we begin to think of immunization with bacterial vaccines, we always must ask, Is the disease that we are going to try to immunize against a clear cut entity, due to a single type of organism? Or is it due to several types of the same class? Or is it due to many different varieties of organisms?

We know that certain vaccines are effective, such as those against typhoid fever, cholera, smallpox, diphtheria, and I think we can add scarlet fever. Others are only moderately effective, like the pneumococcus infections and those due to influenza bacilli, and to the whooping cough bacilli.

I shall touch on a few of the most common vaccines and hope perhaps to bring up a few practical points with which you are not very familiar.

TYPHOID FEVER

As to the typhoid vaccine, we have all been interested in that recently, because of the outbreak of typhoid which we believe to have been due to oysters. We might take a moment to say why we believe that. When we look at the water supply of this city we find that there is no relation between the typhoid fever and the water supply, absolutely none. When we look at the milk supply we find absolutely no relation. When we have eliminated the water and the milk, we have practically confined the possibilities to oysters and green vegetables.

It is an interesting thing (I think I am right from what I have been told) that the Italian population eat a great deal of green vegetables, and they are peculiarly exempt from this typhoid outbreak; while on the other hand we find that typhoid is mostly in the residential district where people of greater means live, who are used to eating oysters. We find that people in Chicago, and in Rochester, and in Buffalo, and Syracuse and Philadelphia, who have had oysters from the New York oyster district, have suffered from a considerable excess of typhoid fever, and we find that fully seventy per cent. know that they have eaten raw oysters within the time; and then curiously we have some places like Baltimore, where there is a slight excess, and we find a marked percentage of those have been visiting New York.

As to whether we should vaccinate or not. The question of whether we should use typhoid vaccine

or not must be decided on the question of whether the definite immunity which is recognized to be due to the typhoid vaccine is worth the annoyance and expense of the inoculation, and each physician must decide for his patients that question. We have much information as to the value of typhoid vaccine.

We know from our own results of vaccination before the war. When the men went down to the Texas border, they had been vaccinated with typhoid bacilli, but not paratyphoid A or B, and there were only one or two cases of typhoid among all those men, but many cases of paratyphoid A. There was a clinching argument, because if they came in contact with paratyphoid A they must have come in contact with typhoid infection.

Then you know the result of the great war. I was there a few weeks in Paris in 1917, and they showed me the records, how before the French troops were vaccinated, because they were called out in such an emergency, the typhoid cases ran up to five or six hundred a day. Then when they were vaccinated, typhoid almost disappeared. From that and the evidence of individuals we know that typhoid vaccine given in three injections does give a marked immunity for two years, and a considerable immunity for three years.

We continue, as a rule, to use the triple vaccine because you can give the three organisms, the paratyphoid A and B plus the typhoid, with only a moderate amount of increased reaction. If you mind the excess of annoyance and believe there is little chance of paratyphoid infection, you can give the single typhoid vaccine.

If the first injection should give a marked reaction, it is wise to give another dose of the same size instead of doubling it, and then add two more half doses. Or, if you want to be very cautious, you can halve the first dose and then give one half a c.c. at the second and third, and the fourth a full dose. In that way you will cut down the reaction. The more the dose to be injected is divided to make additional injections, the better the response. There is no promise that any one can make that if the first injection does not give a reaction, the second or third will not. As a rule, the second and third are less, and the second is not as much as the third.

We cannot promise that the first injection made years ago having been without annoyance, that a new one now will be. There is a vast difference in the individuals as to whether the first and second inoculation series shall be alike. I know one friend of mine who passed through the first series of inoculations without annoyance, but had a severe reaction from the second series five years later. Those who have been injected should continue to take reasonable precaution because the protection is only slight in some.

There are several methods of performing a vaccination for smallpox— the scratch of an eighth of an inch with the rubbing in of the vaccine, the three or four punctures with the needle through the vaccine, the intracutaneous inoculation, and the subcutaneous.

We prefer, from the health point of view, the tiny scratch of an eighth of an inch, because that makes definitely a moderate scar. You seldom get a large scar if the vaccine is rubbed into so small a scratch. If you make punctures, they don't always give definite scars, and it is hard to show years afterwards, when the children go to school, whether they have been vaccinated definitely or not.

The same thing is sometimes true of the intracutaneous method. The subcutaneous method, I think, is decidedly to be objected to because you are not at all sure whether you have had a vaccination or not, and, of course, you also have no scar unless you get a vaccination at the point of puncture.

With the regulations enforced for the past ten years, nowhere in this country has any vaccine been found to contain tetanus, nor has any vaccine in capillary tubes been shown to produce tetanus on vaccination. We have not had for three years any case of tetanus following vaccination in New York city. Over a series of years we have possibly one a year on the average, but in every case the tetanus has come at such a date and usually under such conditions that you could positively say that the tetanus infection had occurred in the child after the development of the vaccination.

It is impossible to promise absolute immunity for more than one year; therefore, in the Health Department we have the rule that after any direct exposure, a person not successfully vaccinated should be vaccinated again if more than a year has elapsed. If they are immune, there is no annoyance from the vaccination, and we get what we call an immunity response within twenty-four hours, a slight beginning reaction which disappears after another day. Unless there is a direct exposure or the presence of an outbreak, a five or even a ten year period between vaccinations is suitable. Vaccine virus should be kept in a cold place.

DIPHTHERIA

The prevention of diphtheria. That disease kills more and maims more people than typhoid fever, and yet while the general practitioner will use typhoid vaccine freely and with enthusiasm, it is difficult to get the physician to use the diphtheria toxin-antitoxin. It is interesting the way the work that we started in New York has spread, so that instead of being in the forefront of using toxin-antitoxin to immunize, we are getting behind a number of other cities.

The diphtheria mortality and morbidity after dropping in the last four years to one half of the deaths and two thirds of the cases, have slightly increased, and we expect to have one hundred more deaths this year than the year before.

I had one hundred and fifty consecutive children looked up a few weeks ago and found that only three of those children had been Schick tested or given toxin-antitoxin. Two had been given toxin-antitoxin and one other had been Schick tested. All the others had not had any immunization, so that certainly there is no reason to say that it was in spite of immunization that such a considerable amount of diphtheria occurred, but rather because it had not been done. Of those two in whom diphtheria developed who had had the toxin-antitoxin, both were so mild that it was doubtful whether the condition was diphtheria or not. We know that only about eighty-five per cent. of the first series of inoculations produce immunity in children. The best men find no trouble in getting the mothers to consent to it, and often they have their enthusiastic cooperation; so that I hope that we may all be more enthusiastic

about using the toxin-antitoxin, either with or without the Schick test.

Of course the Schick test is somewhat technical, but any of us, with a little salt solution and practising a few hours, could become skillful in giving an intracutaneous test, or if we prefer we can give the toxin-antitoxin just under the skin in the arm above the elbow. Give one c.c. of toxin-antitoxin subcutaneously and you get the same result as with the Schick test. Dr. Schroeder is using that method entirely in the Brooklyn schools, and we are going to start in Manhattan by giving one c.c. subcutaneously, not deeply, but superficially. We get a reaction exactly like the Schick test only about four times as great in extent. If the reaction is positive we continue the injection, while if negative we discontinue them or give a second only.

There will be a few more positive reactions that way than with the Schick test. In that way you can simply give the three injections and the first injection will show whether the other two are needed or not, and that may make it easier for physicians to use. It is simply a strictly subcutaneous injection.

SCARLET FEVER

As to scarlet fever, we have all read in our medical papers recently of the work. It is interesting to look back and think that it has been thirty years since the first work in scarlet fever was done, and that in 1906 Gabritchewsky definitely showed that the streptococcus from scarlet fever made a toxin which when injected in sufficient amount caused scarlatina rashes in those who had not had scarlet fever, and made no scarlatina rashes when the vaccine was given in those who had had scarlet fever. He stated that the work done before by Moser and the older bacteriologists, plus his work, definitely showed that the scarlet fever streptococcus made a peculiar toxin, which, while it did not affect animals, caused the rash in man. He vaccinated some seven hundred children and his colleagues many thousands more, and they assert that in the lack of infection after exposure these children showed that immunity had been produced.

Recently the Dicks tested the filtrate intracutaneously, the same as in the Schick test for susceptibility to diphtheria, and they found to their great interest that the toxin which has no specific effect in small animals does show in man whether a person is immune or not to scarlet fever. Three volunteers, who showed a positive Schick test, were inoculated, and in them there developed scarlet fever. Thus, this more clearly established the conclusions of the earlier investigators that a special hemolytic streptococcus was the cause of scarlet fever.

In our laboratories Dr. Zingher has tested a great many children in several schools in which scarlet fever was developing, and in eleven of those children that had had positive Dick tests scarlet fever developed and in none of the children that did not have a positive test; so we feel, although it has not yet been proved, that the Dick test will rank with the Schick test as a detective of immunity.

We also have now a potent serum, and we are ready to give that out to any who have toxic cases. There is no need of giving it in mild cases.

We all know that scarlet fever has diminished enormously in its intensity and somewhat in its prevalence, and yet its aftereffects are so important, and the long isolation and annoyance are so great that I think people will be even more ready to have the Dick test done and the toxin given than for diphtheria. We don't use toxin-antitoxin because the streptococcus toxin is so mild in its effects that you can use it directly.

BUBONIC PLAGUE

Just a word or two on several other diseases. A great many questions were asked by people as to whether they should go to California when the outbreak of pneumonic plague occurred a few months ago; and we were also asked sometimes whether they should be vaccinated. The evidence so far is that vaccination against the bacillus of the bubonic plague is effective for the mildly virulent infection; but when you have the most virulent type, it is ineffective. That was worked out by Stong and Teague in the Manchurian outbreak.

PNEUMONIA

Pneumonia is a disease of the middle ages of life, one of the mostly deadly diseases we now have. If we could only immunize efficiently and practically against pneumonia we would all feel like doing it. The literature is, on the whole, rather enthusiastic for the immunization against lobar pneumonia, if you can use vaccine of the types of pneumococci that are causing the pneumonia. You will remember that in New York about half of the cases are due to type one; about a third are divided between type two and type three; and the rest are due to type four. Sometimes the type one would be only a quarter and there would be more of type four. We can't hope to immunize against type four, because, as you know, type four is not type four, it is four, five, six, forty—it is all the rest, and for convenience we call it type four. All we can do is to do it against types one, two, and three, which are generally about two thirds or three quarters of the cases. We have tried vaccines quite a bit in New York to test this out.

We first got fifteen hundred volunteers in the Metropolitan Life Insurance Company, and for about six months after immunization the results seemed good—only one case of pneumonia occurred among the fifteen hundred, while eleven cases occurred among the three thousand controls, which made it a little more than five to one, and then in the next few months, several of those vaccinated developed pneumonia, so it seemed that protection against these fixed types of pneumonococci was considerable for about six months. The question remains, is it worth while to be vaccinated every six months against the possibility of lobar pneumonia?

We than transferred our work to the physically well patients over on the Island. The Metropolitan Life Insurance clerks did not note enough protection to be enthusiastic over repeating the vaccination. For three years we carried out there the giving of half of them vaccine and half not. The results there were disappointing. Most of the deaths were from type four pneumococci, and few straightout lobar pneumonias were due to types one, two, and three.

After three years, although over there the physicians felt we had done a great deal of good, we could not see from careful figures that we had accomplished much. The good, I think, was imagined rather than real, because we had excluded the very

bad and very sick cases, and, of course, they were by the physician recorded as unvaccinated.

A pneumonia vaccine is a perfectly sensible thing to give, but hardly a public health measure to urge.

WHOOPING COUGH

Whooping cough is much the same. The results that we have had have shown this. We have been immunizing the children in a large number of institutions and keeping a large number of other institutions as controls, and the difference has been only moderate in favor of the immunization.

Dr. Madson, as you know, has been over here and he gave a lecture showing how in one of the islands where whooping cough had not come for many years, it spread over the place, and they gave the whooping cough vaccine and almost as many cases developed, but only in a slight form, and he thought that that demonstrated that the whooping cough vaccine had immunized the population. I am not sure, because it is hard for me to conceive that an immunizing agent would slightly immunize all, but not completely immunize any. As a rule, some are much immunized, some somewhat, and some not immunized. My own experience has not been extremely encouraging; but it is probably worth giving, and may have some effect.

COMMON COLDS

My results with vaccine against common colds is similar. At the Metropolitan Life Insurance Company, we gave a polyvalent vaccine against common colds. It was a mixture of influenza bacilli, streptococci and three other varieties, the usual shotgun vaccine against common colds. It must be remembered that those who volunteered were undoubtedly those who were likely to have colds, and those who did not volunteer were probably those who did not usually have colds. At the end of the winter there was little difference between those who had the vaccine and those who hadn't; and when we came to the next year, only seventeen of the fifteen hundred offered to be vaccinated again. In my opinion there was little effect from the vaccine.

Diabetes Mellitus, Preventive Measures and Early Diagnosis*

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INCREASING OCCURRENCE OF DIABETES MELLITUS

The incidence of diabetes mellitus in the United States and other countries is distinctly increasing. In the registration area of the United States during the last forty years the death rate per one hundred thousand of population from diabetes has risen from 2.8 to 16.6, while the death rate from all causes diminished during this period; in 1880 deaths from diabetes were 0.14 per cent. of all deaths, in 1921 the proportion had risen to 1.4 per cent. This increase in the diabetic mortality has been constant from year to year. In New York City the diabetic death rate has grown greater from 1866 to 1923; in 1866 the proportion of diabetic deaths to all others was one to 2,437, in 1923, one to fifty-one. Diabetes in the United States now stands twelfth in numerical order as a cause of death. A recent article by Dr. Haven Emerson and Dr. Louise D. Larimore (1) furnishes many of the facts and figures I am quoting in this and other sections.

What is the significance of this rise in mortality rate? It has often been surmised that our methods of diagnosis are more efficient and that our knowledge of derangements in carbohydrate metabolism is more accurate and that consequently cases are identified today that would have passed unrecognized some years ago. This may be true of the earlier stages of the condition, but not of the terminal ones, in which a simple urine analysis readily reveals the true state of affairs. Consequently we may regard the mortality rate as indicating the real incidence of the disease. This shows that diabetes mellitus has increased enormously in the past forty years.

*Read at the New York Academy of Medicine, January 27, 1925, as part of a symposium on preclinical signs of disease with special reference to the management of the health examination, under the auspices of the Medical Society of the County of New York.

OVERNUTRITION

The cause of the more frequent occurrence of diabetes has been ascribed to the more plentiful food consumption associated with the advancing prosperity and higher standards of living in all civilized countries. Thus Legendre estimates that in France, in the year 1832, 1,645 calories were consumed per capita; in the year 1862, 2,245 calories were consumed per capita; in the year 1912, 3,160 calories were consumed per capita. The same is true of other nations.

As sugar has grown cheaper and more plentiful, it has been consumed in larger quantities and added much to the caloric value of our diets. The study of sugar consumption and diabetes shows that they increase or diminish in direct ratio. The changes occurring during the war are striking (Table I).

TABLE I

RELATION OF DIABETIC DEATH TO SUGAR CONSUMPTION

Country	*Year*	*Diabetic death rate per 100,000*	*Pounds sugar consumed per capita*
France	1890	13.5	28.9
	1913	16.0	43.8
	1918	9.6	13.3
Great Britain	1890	6.5	58.9
	1913	11.8	78.5
	1920	10.0	45.0
United States	1890	5.5	54.5
	1922	16.8	103.2

The occurrence of diabetes is not to be ascribed to the sugar alone, but to the increase in our total number of calories. Furthermore, a person leading a sedentary life can not cope with the same amount of food successfully, as one who is exercising constantly. Too little physical exertion coupled with a liberal diet leads to obesity and the combination tends to diabetes mellitus. Dr. Joslin has given us serious warnings concerning excessive gain in weight as a factor in the

production of diabetes for some time. The evidence thus far brought forward is certainly in favor of this conception. It is interesting to note that the increased incidence of diabetes is in the age periods above forty-five, a period in our existence when we are prone to be less active and eat more when compared to previous generations.

It must be understood that overeating and obesity are not the only factors concerned in the production of a diabetes. There are many very obese individuals who do not suffer with glycosuria and never will. In addition to the strain put upon the bodily functions by food excesses, there must be a diminished tolerance for carbohydrates—a lowered internal secretory power of the pancreas, as we believe diabetes to be. Under these circumstances diabetes is extremely prone to develop.

Overeating, an absolutely sedentary life and obesity are noxious factors. The death rate of the obese individual above forty-five years is known to be high and the life insurance companies do not favor him as a risk. From the point of view of general health and especially of potential diabetes physicians must most seriously council proper diet and exercise as prophylactic measures in everyone.

HEREDITY

There are carefully worked out family trees for diabetes showing how the disease may without doubt be hereditary in certain instances; in these families sometimes the condition shows a distinct tendency to occur at an earlier period in each generation. At present the hereditary factors are being discredited as applying to diabetes in general. It is argued that with the marked prevalence of diabetes it is not remarkable that a fairly large number of cases occur in families that have a diabetic ancestor. It may be true, too, that overeating, sedentary habits and obesity prevail in certain families, thus favoring the occurrence of diabetes among them. However true these suppositions may or may not be, a careful supervision of the children of diabetic parents is well worth the trouble. I know of one such instance in which the monthly examination of urine served to ferret out a diabetes at an early stage and thus furnished the indications for treatment at a time when they were of the greatest help.

NERVOUS STRAIN

It is true that nervous strain, whether of short or long duration, slight or severe, will disturb an existing diabetes. There are many instances in which an exacerbation of the condition was produced under these circumstances. Thus in a woman, who was very much shocked because her boy had an epileptic seizure, it required six months of treatment to restore the carbohydrate tolerance to the former level.

There is considerable doubt, on the other hand, whether nervous strain influences the onset of diabetes. During the world war among the soldiers, as well as among the civilians, diabetes diminished in frequency. The nervous strain was at a high point constantly for all concerned and yet the low diets of those days far outweighed the effects of the high nervous tension.

A diabetic should therefore be shielded from nervous strain.

SPECIAL CAUSES

We know little of the causes that affect the pancreas directly and bring about diabetes. In fact it must be admitted that in the majority of cases of diabetes, although we may feel certain that there is a pathological condition in the islands of Langerhans, yet the factor or factors bringing about such an anatomical change is unknown to us. There is one type of disease that should be considered in this connection and treated energetically in order to prevent diabetes. This is any obstructive state of the terminal portion of the common bile duct which would have a tendency to force the bile into the pancreatic tissue instead of allowing it to pass directly into the small intestine.

IMPORTANCE OF EARLY DIAGNOSIS

If the greatest good is to be accomplished for the patient the treatment must be begun at the earliest possible moment. There are many reasons why this should be considered most seriously. In all diabetics the presence of glucose in the urine signifies an overload of the bodily functions which utilize this material; in most of them this strain upon the sugar digestion results in a progressive loss of carbohydrate tolerance that very frequently can never be wholly or even in part regained. Hence early limitation of food so as to allow the urine to become sugar free and consequently the sugar utilizing functions to work within their capacity is urgently indicated. There are some diabetic patients in whom a trace or a small amount of sugar in the urine is not associated with a gradual increase of the severity of the disease. However, there is no absolute way in which the progressive and nonprogressive types of diabetes can be differentiated and it is to say the least unfair for the physician to gamble on these possibilities and be negligent of eliminating glycosurias energetically.

It is an established fact that a persistent glycosuria entails other penalties than a simple loss of carbohydrate tolerance. For some time it has been appreciated that the diabetic patient might not be particularly subject to a diminishing carbohydrate tolerance and yet die before his time of one of the complications of the disease. In neglected cases arteriosclerosis entailing gangrene, angina pectoris, contracted kidney, and other conditions, are almost sure to be present sooner or later; cataract, boils, carbuncles and constitutional infections may also be regarded among the common and serious complications. It is an open question whether the hyperglycemia has any relation to these states or not. There is no definite proof either for or against such a supposition. Personally I believe that the desiccation occurring in the body as the result of polyuria is the principal factor responsible for them. Some of our patients, in the days before insulin, with marked progressive furunculosis have been cured when the urine has been rendered sugar free and the polyuria abolished even though the blood sugar remained well above the normal level. The elimination of sugar in the urine therefore is important from another point of view; it sets aside a dryness of the tissues through the control of polyuria and thereby prevents secondary changes of a serious nature; among these we believe that arteriosclerosis and its sequelæ and various forms of infection are particularly important.

The early diagnosis of diabetes mellitus is of great economical importance from two points of view. In the first place proper treatment begun at the incipiency of the condition will prevent the loss of strength and physical and mental efficiency so frequently seen in neglected cases. Furthermore, a patient seen in the early stages can be readily controlled and taught the required steps in diet while carrying out his or her daily routine of work and relaxation. It is only in advanced, or rather, neglected, cases that money and time need be spent upon institutional care. It is a curious fact that frequently a patient whose diet has been properly controlled will have an exalted feeling of physical efficiency for several weeks or months when he takes the bit in his teeth and goes off on a carbohydrate bat; sugar appears in the urine, there is an increase in weight and the sense of well being alluded to above. This is wonderful for a short time and frequently lulls both patient and medical advisor into a false feeling of happiness and security until the time comes when the overstrained internal secretions of the pancreas can not keep up the pace any longer and a crash occurs; now polyuria, progressive loss of weight, ending in emaciation, marked diminution in physical vigor come about suddenly and make all concerned realize that the gentle and thoughtful directions which Naunyn, more than any other man, has formulated for us, have their purpose. The same phases of increased appetite, physical efficiency ending in catastrophe are the lot of the incipient case of diabetes mellitus that is not diagnosed and treated at an early stage of the disease.

MEANS FOR EARLY DIAGNOSIS

There is nothing that surpasses the availability of the routine urine analysis. In cases where there is a suspicion that diabetes may exist it should be performed once a month. The prevalent laboratories that carry out an examination for one dollar are a boon in this connection when a physician's own laboratory is not available. The analysis of urine by the patient under observation has not yielded satisfactory results in my hands; such amateur chemists as well as their families often appear to suffer from undue nervous strain. No general examination should be considered complete without a routine urine analysis.

If a socalled trace of sugar is discovered in the urine on life insurance examination or otherwise it is often a matter of the greatest difficulty to determine whether or not this is really present. There are several important factors to bear in mind in this connection: the normal human urine contains a trace of reducing substance, equivalent to as high a concentration as .05 per cent of glucose; this will usually furnish a slight reaction with the Fehling-Benedict test. To be certain of what constitutes a reaction for pathological traces of glucose is often very difficult.

It is much the better method of procedure to obtain other specimens and begin the tests over again. It is advisable under the circumstances to ask the person suspected of having glycosuria to eat freely of starchy foods, especially sugar on the day of the test. If only single specimens can be obtained they should represent the urine voided two hours after the heaviest meal; the specimen taken after the dinner in the evening serves well; the urine voided on arising, which is so often furnished the physician, is apt to be free from sugar (unless insulin is being used when it is more likely to contain glucose than the specimens representing the remainder of the twenty-four hour secretion). The most satisfactory method is to obtain the urine at about two hourly intervals throughout the day and a single specimen at night and test each sample for glucose. Traces of sugar may often be identified in such voidings that are lost to chemical means if tested for in a twenty-four hour sample of urine. The tests to be employed are the Fehling-Benedict procedure, fermentation with yeast, and the phenylhydrazine crystals.

If the urinary tests prove to be inconclusive, and they very often do so, the blood sugar should be resorted to. It is the general custom today to obtain the blood for this as well as other chemical tests while the individual is fasting, before breakfast. This method of procedure furnishes data that tell us what has occurred at time of the least strain upon the individual and I do not believe that they yield the most useful or important information for the physician who is attempting to make a diagnosis or regulate the diet. As far as the blood sugar is concerned it rises about two hours after breakfast to its highest level of the day, and subsequently maintains this value more or less until night. This is true of the normal individual or of the diabetic who is partaking of a diet more or less adjusted to his needs; when the diabetic eats food far beyond his carbohydrate tolerance the sugar rises in steplike fashion with each meal. If the blood sugar is .140 per cent. two hours or later after a breakfast rich in starches we may suspect that the sugar tolerance is lowered; if it is .150 per cent. or higher we may be certain of it. The custom of considering a blood sugar of .150 per cent. before breakfast as being normal either from the diagnostic or therapeutic point of view is erroneous and leads to many errors and misconceptions. A patient with a normal glycemia from .090 per cent. to .120 per cent. before breakfast may show an abnormally high blood sugar level after breakfast, and it is not probable that the diabetic will maintain his socalled normal blood sugar after his meals.

If a normal degree of glycemia exists two hours or more after breakfast we are fairly safe in believing that no diabetes mellitus exists. If the blood sugar is higher than .140 per cent. we can not be quite so sure of our ground. The same troubles in interpretation creep into the valuation of the socalled blood sugar curves or sugar tolerance tests to be detailed a little further on. To repeat: a normal blood sugar indicates an absence of a diabetic tendency, an increased concentration of glucose in the blood does not necessarily signify diabetes. The first part of this statement is readily agreed to, the second demands some explanation. The situation may possibly be summarized as follows: An increased blood sugar signifies a diminished carbohydrate tolerance, but every instance of lessened carbohydrate tolerance is not diabetes. This is a somewhat vague conception but it has its distinct place in clinical medicine. Through the efforts of many observers it has gradually come to be appreciated that there are a number of diseases or conditions in which the blood sugar is often raised. Some of these are hypertension, arteriosclerosis, nephritis, hyperthyroidism, exophthalmic goitre, hyperpituarism, gastrointestinal car-

cinoma, syphilis and commonly in many patients above fifty years of age, though they are apparently in good health. The difference between hyperglycemias and diabetes mellitus are two, a pathological one and a clinical one. From the pathological viewpoint it is accepted for the moment that in diabetes mellitus there is a degenerative and destructive lesion of the Islands of Langerhans; in the other forms of hyperglycemia the faulty utilization of glucose may be attributed to other internal secretory disturbances, some lesions of the pancreatic tissue or an unknown cause. From the clinical aspect there is a vast difference between diabetes mellitus and the other conditions with disturbed glucose digestion: this lies in the well established fact that diabetes is a progressive disease resulting in such a degree of diminished carbohydrate tolerance within a few years, in most of the untreated cases, as to render life no longer possible, whereas in the other states mentioned this is not the case. The problem of interpreting blood sugar under these conditions with mathematical accuracy becomes impossible. We can be fairly certain that a person with a normal blood sugar after a heavy meal is not afflicted with diabetes but we can not establish a diagnosis of diabetes simply because the blood sugar is high, neither can we deny it. The same holds true of the more involved sugar tolerance tests to be detailed subsequently. Under the circumstances all that can be done, and it should be done conscientiously, is to watch these cases carefully by urine analysis and blood sugar determinations from month to month and await developments.

SUGAR TOLERANCE TESTS

When all other means fail to determine the significance of transient or doubtful traces of glycosuria recourse may be made to the sugar tolerance tests.

One hundred grams of glucose are given the fasting subject and the urine collected at the end of two hours and again for the next twenty-two hours. A trace of sugar (up to 0.2 per cent.) in the first specimen and no sugar in the second specimen are supposed to indicate that no diabetes mellitus is present; higher amounts of sugar are supposed to make the diagnosis of diabetes. This was the method of carrying out this test before it was possible to resort to the determination of sugar in small amounts of blood.

Today a sugar tolerance test, properly carried out, calls for a number of urine analyses and blood sugar determinations. Control specimens of urine and blood are obtained from the fasting subject; one hundred grams of glucose are administered; subsequently at intervals of twenty, forty, sixty, and one hundred and twenty minutes after the taking of the sugar, the urine and blood are again collected. The normal results should be within the following limits: 1, the urine throughout should give no evidences of glycosuria; 2, the fasting blood sugar level should be below .120 per cent.; 3, the maximal blood sugar should be .160 per cent. or less; 4, the blood sugar should return to a level of .120 per cent. or less in two hours.

If such a blood sugar curve shows a prolongation beyond two hours and a higher maximal figure than .160 per cent. a diminished sugar tolerance is demonstrated. Unfortunately such a condition is not pathognomonic of diabetes mellitus, but may also occur in hyperthyroidism, arthritis, nephritis, gastrointestinal carcinoma, epithelioma and, even, in socalled normal persons. The only diagnostic value of the procedure lies in the fact that a normal curve in all probability indicates that there is no diabetes present.

A further valuable aid in clearing up the significance of glycosuria by these means is the demonstration of a lowered kidney threshold to glucose, below the normal level of .170 per cent. In such instances of socalled renal glycosuria the origin of sugar in the urine is explained in a vastly different fashion than in true diabetes. These patients usually do well and diabetes does not develop though they may constantly or intermittently exhibit a glycosuria; they should be watched, for the above statement that renal glycosuria is not significant of diabetes is not admitted by everyone.

From the statements above it may be gathered that the early diagnosis of diabetes is not always an easy matter; doubtful cases should be observed carefully for a long period before a final opinion is rendered.

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Asthma and Preasthmatic Conditions*

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By the words hypersensitiveness and allergy we mean to denote an abnormal clinical response to absorbed substances, and we consider that a response is abnormal when it is obtainable in but a small percentage of a species. A striking example is the rather rare occurrence of an acute reaction in an infant, following the ingestion of egg and manifested by swelling of lips, tongue, and face, vomiting, pudging, dyspnea, cyanosis, urticaria, and collapse, whereas, egg is a perfectly natural and wholesome food for most infants. In the abnormal response these symptoms occur so immediately and so violently on contact with the smallest conceivable fraction of an egg that it is evident the trouble lies not with the egg but with the child who has developed peculiar reactivities. These reactivities constitute allergy.

The substances to which a case may be allergic gain entrance to the body in the following way:

1. Through the respiratory mucous membranes. (Inhaled substances, such as air borne dusts.)

2. Through the gastrointestinal mucous membranes. (Ingested substances, as foods or drugs.)

*Read as part of a symposium on preclinical signs of disease at the New York Academy of Medicine, January 27, 1925.

3. Through the skin. (Drugs externally applied or the poison of ivy or subcutaneous injections for therapeutic purposes.)

4. From foci of chronic infection.

The clinical manifestations of allergy are many and vary with the tissues that happen to be reactive. These tissues are essentially those of epiblastic origin, the skin, the mucous membranes of the upper and lower respiratory tract, and the mucous membranes of the intestinal tract. The following are the usual manifestations of allergy:

1. The skin manifestations are urticaria and angioneurotic edema, eczema, dermatitis of various forms, vesicular, as ivy poisoning, erythematous and papular.

2. The mucous membrane reactions in the upper respiratory tract give rise to symptoms of hay fever. When the attack is seasonal and the reaction is to pollens, it is true hay fever, but when it is paroxysmal or perennial and the reaction is to sachets, dust, feathers or dander, it gives rise to the clinical condition known as vasomotor rhinitis. These conditions are more accurately designated allergic coryza of seasonal or perennial type.

3. When the reaction occurs in the bronchi, we have the clinical symptom asthma. Reactions also occur in the pharynx, larynx, and trachea, and give symptoms peculiar to irritative conditions in those areas.

4. The hypersensitive conditions of the mucous membrane of the alimentary tract may give rise to acute reactions—acute food allergy already described—or the symptoms may be confined to a portion of the tract and give rise to gastrititis, enteritis, or colitis. In some cases the manifestations of the food allergies are not acute and merely lead to evidences of mild disturbance, as anorexia, undernutrition, nervous irritability, and sleeplessness. When these symptoms occur in childhood the children are below par in weight, bone and muscle development, and mental activity. At times the clinical symptoms are paroxysmal and explosive, as in the periodical vomiting of children. The chronic as well as the acute food reactions are often due to some particular food toward which the child manifests an instinctive dislike.

The special object of my address is twofold. First, how can we recognize the allergies in their preclinical or developmental stage? Second, what measures can be taken to thwart the development or manifestation of the clinical reaction?

The first of these questions, the early recognition of allergy, or allergic tendencies, brings us at once face to face with the question of pathogenesis. All that we know of this is derived from studies of inheritance. In 1915 with Dr. VanderVeer and in 1924 with Dr. Spain, I collected complete family histories from 796 allergic cases in 549 different families whose total offspring was 1889. The following points briefly summarized were derived from these studies:

FAMILIAL OCCURRENCE

When data were collected from a large number (several hundred) of normal persons, we found an antecedent history of allergy in seven per cent., whereas the 796 allergic cases gave a positive allergic history in antecedents in fifty-eight per cent. This certainly suggests a familial influence.

INFLUENCE OF HEREDITY ON AGE OF ONSET

We divided the allergic cases into, a, those with both paternal and maternal history; b, those with either paternal or maternal history; c, those with no antecedent history.

In the first group (double inheritance) clinical symptoms of allergy began before the tenth year in seventy-five per cent. Where the inheritance was single, only thirty-one per cent. began symptoms before the tenth year of age. Where there was no inheritance evident but twenty per cent. began before the tenth year. These percentages indicate a decided familiar influence on the age of onset of clinical symptoms. The more complete the inheritance, the earlier the age of onset.

AN ESTIMATE OF FREQUENCY IN OFFSPRING OF ALLERGIC ANTEDECENTS

On the basis of these figures it has been possible to estimate that of all children with bilateral allergic

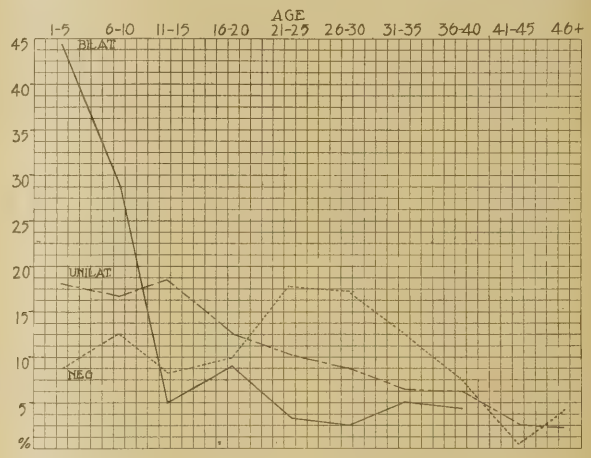

Fig. 1.—Chart showing influence of heredity on age of onset.

inheritance about seventy per cent. will become allergic, while of those with unilateral inheritance about fifty per cent. will become allergic.

I shall not go further in the alluring but speculative field of interpretation on the basis of Mendelian inheritance by dominant recessive or multiple factors, but shall emphasize the point that a positive family history of allergy should arouse suspicion as to the nature of certain disease manifestations in the child.

NATURE OF THE INHERITANCE

One other important point has been elicited in these studies, namely, that the clinical manifestation of allergy in the offspring is as often different from as it is identical with that of the antecedent. For example, the parent may be sensitive to pollen and have hay fever, whereas the child is sensitive to egg, and the slightest contact with it produces vomiting, diarrhea, urticaria and collapse. In other words, the inheritance is not of the condition itself, but rather of a tendency to some allergic state.

MULTIPLE SENSITIVENESS

One other point is of interest in the question of human allergy and that is the fact that in a majority of the cases an individual is or has been allergic to more than one substance. There are persons who are sensitive to as many as twenty-five different substances.

1. An individual may have one clinical condition and be sensitive to many different substances all of which produce this one clinical result.

2. Or, a person may have asthma from pollen, and urticaria and angioneurotic edema from fish.

3. Or, a patient may give a history of egg allergy as an infant which was outgrown at the age of five, and was then replaced by an asthma from dander at the age of eight, and at twenty-five become in addition a victim to seasonal hay fever.

All of which merely shows the curious constitutional defect manifesting itself throughout life. This tendency adds greatly to the difficulty in the management and diagnosis of these cases.

ASTHMA

This is possibly the most important of the recognized allergies because, 1, it tends to a chronic condition which interferes with education, work and pleasure, and 2, the complications and sequelæ are numerous and disabling. The commonest are, emphysema, chronic infection of the bronchial tract, and chronic infection of the paranasal sinuses. The causative factors in asthma vary with the age of onset. When the clinical onset occurs in infancy, it is due to foods or infections. Rarely do air borne substances (pollens or animal danders) cause trouble before the third year. When caused by foods, the attack may be merely a part of an acute allergy with vomiting, diarrhea, erythema, and urticaria; or asthma may occur alone. In these early food cases the development is not gradual. Asthma usually occurs the first time the food is taken, the attack is acute in its onset and it follows almost at once upon the ingestion of the offending food, such as milk, egg, chicken or wheat. These infants are often the victims of severe and protracted eczema. The attacks of asthma in infants caused by infections are limited to infections of the upper respiratory tract and bronchi. They are gradual in their development. Such infants have frequent attacks of bronchitis with an increasing amount of wheezing, until finally a severe attack of dyspnea is associated with the bronchitis; and thereafter each attack is regularly an asthmatic affair, usually paroxysmal, but at times becoming continuous for months, especially in the winter. These infants as a rule have definite lymphoid hyperplasia in the pharynx, tonsils, nasopharynx and lingual tonsils. The hypersensitiveness to foods and infections in infants tends to spontaneous disappearance between the fifth and tenth years, but all too often the asthmatic manifestation continues as the result of a new sensitiveness to inhaled air borne substances.

Asthma that develops from the third to the thirtieth year is usually caused by the air borne substances, pollens, sachets, animal danders, and house dust. Here the onset is gradual. Usually coryzal symptoms begin first. These cases are usually known in the family as "sneezers." They seem to be the victims of frequent mild afebrile colds in the head. Then cough and wheezing develop and eventually an attack of dyspnea stamps the condition as asthma.

Asthma developing after the thirtieth year, and especially after the fortieth, is usually the result of chronic foci of infection in the bronchi, tonsils, teeth, sinuses, etc. Here, too, the development is very gradual. Cough and wheezing and frequent attacks of bronchitis may go on for years before the true dyspnea of asthma begins. Many of the cases of chronic bronchitis with emphysema are truly infective asthmas and should early be recognized as such, for the results obtained with some of these old longstanding cases warrant the belief that much better results could be obtained had they been treated along the same lines that we now follow after they have become definitely asthmatic.

In discussing the measures that may be taken to prevent the development of the allergic conditions, frankly I must admit that I do not know that we can prevent the development of any allergy. When you recall that the whole study of this branch of medicine covers a span of less than fifteen years, you will see that there is good reason for lack of data on such a fundamental question as the prevention of development of an inherited trait. But an early recognition of asthmatic tendencies with a correct diagnosis of the causes will allow a prevention of the clinical manifestations of that hypersensitive condition with its train of evil consequences.

In the infant the only preasthmatic clue lies in the family history. When the reaction occurs to food, it does so abruptly and cannot be avoided, but the condition should be readily recognized and a diagnosis made of the specific cause. The food should be withdrawn from the diet absolutely and for an indefinite time. But when infections occur frequently in the upper respiratory tract and bronchi in infants with an allergic inheritance, attention should be immediately directed toward probably infected adenoids and tonsils. On account of the possible later development of sensitiveness to air borne substances these children should be treated as are older children who are sensitive. Pets should not be allowed in the house. The mattresses and pillows should be of good curled hair and renovated once a year. There should be no box springs on the bed, and only small rugs on the floor, and no overstuffed furniture to hold the dust. In other words the environment should be as dust free as possible. The diet should be simple and emphasis laid upon variety of foods.

Drugs should always be prescribed with care, since asthmatics as a class are often victims of drug idiosyncrasy which is drug allergy. Aspirin and quinine should be used with particular care. Flaxseed and mustard for poultices may do more harm than good. I have seen several children in whom a simple bronchitis has been regularly turned into a violent asthma as soon as the poultice was applied, on account of a sensitiveness to mustard or flaxseed.

CONCLUSIONS

I believe a great deal can be done for the allergic cases by an early recognition of the condition and a prevention of the clinical symptoms. These clues for early diagnosis lie: 1. In the family history. 2. In the past history. Allergies of early life warrant the suspicion of allergy in later life. 3. In the present history a definite allergy should bring under suspicion recurring colds and bronchitis as a possible forerunner of asthma. 4. Finally the physical findings of chronic foci of infection in the respiratory tract should receive attention.

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Presurgical Conditions Including Cancer*

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It seems unnecessary and almost presumptuous to tell practitioners of medicine in New York city the things about which I am going to talk. You know them—they have been drilled into you from your medical school days. Yet I shall do it in the remote hope, not that it will add anything to your knowledge, but that it will strengthen your resolutions—resolutions of thoroughness.

The nut which offers the real kernel is the cancer problem. Can you do anything to prevent or limit this affliction? You practitioners are almost the only ones who can. And you have your opportunity through these contemplated periodical examinations. You may ask how? In answer I would say that there are certain conditions which predispose to cancer, the avoidance or correction of which will prevent the development of the disease. Among these may be mentioned senile skin lesions on the face, irritated tongue and gums from rough tooth plates or carious teeth, lip fissures, leucoplacia, and cervical erosions and tears. All of these should be noted and appropriate measures employed to remove the cause and cure the lesion. The danger is that the practitioner will delay in order to determine what will develop. Unless you know definitely that a lesion in the mouth or on the tongue or elsewhere is benign, consult an authority. Under his advice a biopsy, if necessary, can be made. This will settle the question at once. I say, advisedly, get advice before the biopsy, first, because in some cases the necessity for biopsy will thus be avoided; second, the site must be carefully selected; and third, in the case of deep tumors, as of the breast, it is felt that a cancer should not be incised and operation delayed, if operation is indicated.

In regard to biopsies, Ewing states that "the removal of a small carefully selected portion of an accessible tumor seldom results in any harm." And Wood states that experimental evidence indicates that the number of metastases is not increased by biopsy. Nevertheless, even in superficial lesions it is wise to avoid the habit of taking out a piece of tissue in one's office and sending it to a laboratory for an opinion. It is best to allow the consultant or prospective operator to see the case before such interference. And this leads us to several points of vital importance in connection with such laboratory tests.

1. Pick a real pathologist. A technician who makes a slide for examination is not necessarily competent to make a diagnosis. The possession of a microscope does not make a pathologist.

2. The individual pathologist's leaning and general point of view should be known to you. Just as röntgenologists differ in knowledge, accuracy and reliability, so do pathologists. Know whether the pathologist who says "suspicious of cancer, operation indicated," should be blindly followed or his advice checked up.

3. Remember that the pathologist's opinion often can be made much more valuable if he sees the lesion *in situ,* or at least has a thorough clinical record of the case. It is important that the proper site be selected for biopsy, that the tissue removed be gently handled, and not pinched with forceps.

MOST FREQUENT MALIGNANT GROWTHS

I shall now touch upon the more frequent growths and their early recognition.

The person who presents himself or herself for examination should always be considered a potential host for cancer. In women the breast and cervix are the most frequent sites and fortunately a lesion can usually be recognized. They are from a diagnostic viewpoint superficial lesions, as are most carcinomata of the rectum, and the usual excuse for failing to recognize their presence is failure to palpate the breast, inspect the cervix, and introduce a finger in the rectum. While it is assumed that a careful history has been taken in every case, facts suggestive of a lesion may or may not have been elicited. None the less a thorough physical examination should be made and no major orifice should be forgotten. While the question of age has a marked bearing on the incidence of the disease, youth is not altogether immune and the relatively young should be approached by methods of the same thoroughness as those of advanced life. I have known cancer of the rectum to occur at eighteen, and of the cervix at twenty-five years of age. It must be remembered that cancer in the young is usually extremely malignant, hence the importance of early recognition.

Breast.—While a complete physical examination may lead to noteworthy features being recognized on inspection, palpation is the most important factor. The breasts are best examined with the patient lying down, the tissues being palpated with palmar surfaces of the fingers pressed downward against the chest wall. Thus small masses may be appreciated far better than by pinching the tissues between the thumb and fingers as is usually done. A regular, nonadherent, movable rounded mass in a young woman may be assumed to be a fibroadenoma. A rapidly developing painful mass in such a person is likely to be a cyst. And here I must remind you that cancer of the breast grows insidiously and, unfortunately in its early stages, painlessly. The woman with the cyst flies to the doctor on account of the pain; she who harbors a cancer, harbors it with nonchalance for some months because there is no discomfort. These benign tumors and cysts ordinarily indicate conservative surgery. They are removed because, first, there is a possibility, in some, of a mistaken diagnosis, and second, occasionally a benign tumor or cyst later is the tissue in which or from which cancer develops. Small, multiple, rounded, firm areas usually indicate the socalled cystic degeneration (Schimmelbusch disease). In some of these the histological picture is ominous and is described by some pathologists as a precancerous condition. We cannot enter into this discussion nor can one generalize as to the treatment of these cases. The indications in the individual case

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must be carefully weighed under proper advice. Bloody discharge usually means a duct papilloma. Such cases demand surgery, as does chronic eczema of the nipple and areola, which is the clinical picture in a type of cancer known as Paget's disease.

We now come to the most vital condition, carcinoma. A hard, irregular mass, however small, must be regarded seriously and immediate action taken. Attachment of the mass to the superficial or deep tissues is of great significance. It must be emphasized that involvement of the skin, shown when the skin is gently pinched between the fingers by pitting or dimpling like pigskin or orange peel, is almost always cancerous. The dimpling may be present over an area of only trifling extent, yet it is significant. Again I insist that such a mass is best palpated with patient lying down. But repeated and unnecessary palpation should be carefully avoided. The importance of this is shown by F. C. Wood. He states that if animal tumors are gently massaged, the number of metastases to the lungs will be greatly increased. The absence of palpable regional lymph nodes should not be taken as an argument against cancer. Do not wait for the appearance of nodes. Their presence modifies the prognosis, but is unimportant from the diagnostic viewpoint. And above all do not try x ray or radium in the early cases. There is no convincing evidence that such irradiation depresses the vitality of cancer cells sufficiently to warrant delay in operation for such therapy; moreover, the contention that irradiation closes the lymphatics of the exposed region has been shown by F. C. Wood to be untenable.

Radical surgery is the only method of treatment in early cases. Into the details of operation I shall not enter, except to state that biopsy should be made in questionable cases at the time of operation, the tumor or breast being removed and a frozen section made immediately. If the report is positive, radical mastectomy is immediately performed. In relatively early cases, where the adjacent lymph nodes are not involved, the prognosis by operation is good. The prognosis becomes progressively and rapidly poorer as the interval lengthens between the recognition of the mass and the operation. I have recently seen two cases in which the women were conscious of having a mass in the breast for four and six months before seeking proper advice. In one, a member of her family, a doctor, favored the delay of six months. In both the delay depreciated enormously the chances of success by operation. In another case a doctor excised a tumor and closed the wound. The pathologist later reported the growth to be carcinoma and the woman was told to submit to a second operation one week after the first.

Uterus.—In many cases of cancer of the uterus a careful history will elicit some suggestive feature. Always regard with suspicion any bleeding between periods, after coitus, after exertion or defecation. Bleeding after the menopause usually means either cancer or polyp (Cragin). Particularly suggestive is a thin watery irritating discharge having a strong odor and occasionally bloodtinged. Loss of weight, and pain are, in general, late symptoms. The cases with suggestive symptoms are not the ones you are ambitious to discover. Therefore, palpate and inspect the cervix in every woman coming for examination unless there are contraindications. And when the speculum is withdrawn do not forget to introduce a finger into the rectum.

In regard to prognosis, in general it may be said that cancer of the body invades adjacent tissues slowly and metastasizes late, while cancer of the cervix invades relatively rapidly and metastasizes earlier. Cancer of the cervix presents either an ulcer, a tumor, or a combination. It is usually hard, granular and bleeds easily. In contrast an erosion or eversion is not an ulceration, and looks bright red and shiny and has a soft velvety feel. Cancer ordinarily appears more grey, and less bright and shiny.

Cancer originating in the cervical canal is the most difficult to diagnose since it gives fewest symptoms and may not become visible at the external os until it is far advanced. In cancer of the body of the uterus, the uterus becomes enlarged, perhaps to a two to three months' pregnancy. The body presents an irregular feel, and is hard and soft in adjacent areas. In the cervix a section may be removed; in the fundus a curettage may be done for examination. But curettage has its limitations and must reach all parts of the wall, and a negative report is not conclusive. Finally, in the absence of cancer, treat and cure the benign lesions. This is of the greatest importance. Cancer of the cervix rarely occurs in a nullipara; it usually develops in the torn cervix which is diseased. Therefore, the correction of erosions or endocervicitis by appropriate methods will do much to diminish the incidence of the disease.

While most other sites are common to both sexes, cancers of the buccal mucosa, stomach, and rectum are more frequent in males. Since the prognosis of even moderately advanced cancers of the tongue, pharynx or cheek is bad under the best of care, the prevention and very early recognition and treatment of these lesions is essential. Prevention embraces the removal and avoidance of continuous irritation and the treatment of benign lesions. The details have been already sufficiently discussed. The results of surgery have been so poor that some authorities favor radium with excision of the regional nodes. While accepting the high percentage of operative failures, these must be attributed in large measure to the rather advanced condition in most of the cases. A cure cannot be expected in these by any measure, and the less mutilating procedure is probably the best. But early cases are best treated by radical surgery, employing radium or x ray as postoperative aids.

Stomach.—Cancer of the stomach may or may not give rise to symptoms early in its course. A history of gastric symptoms suggesting ulcer, especially in one of middle life or advanced age, should lead to a gastric analysis and careful fluoroscopic and x ray examinations.

In the presence of an early cancer, convincing evidence of a gastric lesion can usually be made out. If a lesion is strongly suspected in patients of the cancer age and in reasonably good condition, exploration should in most cases be advised, because early cancers of the stomach, at their usual site near the pylorus, give favorable results by operation if a wide resection is performed. And let me call your attention to the fact that a tumor of large size in the stomach is not necessarily inoperable. In some of these masses the size is largely due to inflammatory reac-

tion with relatively little cancerous infiltration. Moreover, some large papillomatous carcinomata are not extremely malignant and are favorable for operation. The immediate mortality is not high.

The same warning must be sounded here in connection with x ray as was made in regard to the pathologist. Consult a first class man. Money is here well spent. Many plates must often be taken; the fluoroscope should, I believe, always be employed as an aid and check on the plates. This work demands much experience. Therefore, avoid the laboratory where only one or two mediocre plates are made at a nominal cost.

I often have patients come to my office proudly exhibiting a couple of cloudy plates on the basis of which someone had assured the patient that he had or had not a serious lesion of the stomach.

Rectum.—Carcinoma of the rectum is best discovered by chance in the course of a routine examination. When symptoms, such as bleeding, pain, and obstruction have developed, the case is usually hopeless, even if the true condition is recognized as soon as bleeding occurs and is not first treated with suppositories or an operation for hemorrhoids. Whereas the majority of cancers of the rectum can be reached, palpated, and recognized with the finger, many are higher and demand a proctoscope. It is easy to slip in an instrument about six inches and this should be done. I do not think that a routine sigmoidoscopy is necessary since this requires some technical skill and is decidedly uncomfortable.

When a lesion has been palpated or seen, do not delay with attempts, which are often abortive, to secure a piece of tissue for examination, nor to try antisyphilitic treatment. If there is a suspicion of carcinoma, obtain competent advice. Radical operation in early cases gives favorable results, and no other method should be tried in such cases. In the course of routine examinations there seems to be a peculiar forgetfulness of the mucous membrane of the rectum as a possible site of disease, and an aversion on the part of the doctor to making a rectal examination even with a gloved finger. This contention is supported by the fact that in one year I found three cancers of the rectum on routine examinations in cases that had been under treatment with uncertain diagnoses.

Let me illustrate further by citing a recent case. The condition suggested intestinal obstruction. Acute onset, pain in upper left abdomen, and vomiting in a woman of fifty-five, abdomen distended, obstipation. A routine vaginal revealed carcinoma of the cervix infiltrating the left broad ligament. This blocked the ureter and had caused hydronephrosis which gave rise to the symptoms.

Colon.—Cancer of the colon demands a word because it is so often inexcusably overlooked. I recall two cases in recent years of cancer of the colon in which an appendix had been removed and shortly after the operation intensive study of the case, which should have preceded the operation, revealed cancer. Delay and the discomfort of a second operation resulted in each case. Again I recall two cases in which the patients were operated upon, respectively, for gallstones and duodenal ulcer, and these lesions not being found, exploration of the appendix led to the discovery of cancer of cecum. Now all of these would have been recognized before operation, if a thoughtful history had been taken which would have led to a barium enema and plates. The true lesion would then have been evident. Therefore, think of this possibility. Do not lightly advise appendectomy in a chronic case without at least thinking seriously of the possibility of cancer of the colon, and I shall add ureteral stone. The other conditions calling for a differential diagnosis are selfevident. But these two are often forgotten.

Skin.—Skin lesions constitute a frequent and important factor in the etiology of malignant growths. The most common are the flat, scaly or warty elevations on the faces of elderly people, known as seborrheic keratoses. They are the most common cause of the development of basal cell epithelioma. They are treated usually most successfully by radium and can be removed without leaving a blemish.

Pigmented moles and warts have been the subject of much controversy. Many authorities teach that they should be removed, as they occasionally, even without any apparent cause, flare up into a malignant lesion with very rapid melonotic metastases. Some authorities believe that they should not be disturbed until they show evidence of growth or irritation. Whichever viewpoint is accepted, they should be considered as serious possibilities. Those situated in regions subject to constant irritation, as under the belt or collar, should be removed. Such treatment, however, should be undertaken only under expert supervision.

This covers the more common types of cancer. I will not discuss hypernephroma, melanoma, caudoma, lymphosarcoma, and other rare types; nor malignant growths which occur as rarities in certain organs as the thyroid and spleen; nor those which demand the skill of the specialist as prostate, bladder, larynx, and esophagus. In such cases one must be alive to the fact that there is something peculiar and obscure, and if he cannot solve the problem himself expeditiously, immediate advice should be sought.

The possibility of syphilis is often considered when a mass is found and a positive Wassermann reaction is often considered as demonstrating that the mass is syphilitic. Such a conclusion is far from true; a positive Wassermann is no more than presumptive evidence in favor of the diagnosis. It is not conclusive. If a positive reaction is reported, one concludes that the patient is a syphilitic, but the lesion nevertheless may be a cancer in a syphilitic patient. The mistake has often occurred, especially in the rectum and tongue where syphilis and cancer are both relatively frequent. The confusion has even occurred in lesions of the stomach. The practical point is that if there is any question of cancer, especially in tongue or rectum, the diagnosis should not be settled by therapeutic measures. The diagnosis must be made independently of antisyphilitic treatment, and not by noting the results of such treatment.

Cancer has involved so much discussion that I can scarcely touch on other presurgical conditions.

I might dwell upon the recognition of hyperthyroidism by estimation of basal metabolism; the differential diagnosis of high fixation of the duodenum for which the appendix is usually removed as a preliminary operation; and even varicose veins as a precursor of distressing symptoms; but each of these

and similar subjects would require a degree of elaboration which precludes discussion at this time. But all that I could say is covered by the advice that in every case make a complete and thoughtful examination. The type of person under observation should be estimated in all details. Valuable prophylactic advice may often be given the patient who is recognized as belonging to the status type; and one's advice as to operative treatment is often modified by trifling details which are picked up on careful scrutiny and when welded together form a definite index as to what is best for the patient.

Periodical Health Examinations from Viewpoint of Endocrinology*

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The glands of internal secretion are subject to the same diseases that attack other tissues of the body. For instance, the thyroid gland is subject to a certain spirochetal infection which we see in South America, known as Chagas's disease; the pituitary body is prone to be attacked by syphilis; and the adrenal glands are attacked by tuberculosis, scarlet fever, and diphtheria. These diseases show affinity for these glands, and as a result we have certain abnormalities resulting from those infections. I am not going to discuss those things. What I intend to discuss is this: The internal glandular system as a system that has to do with constitutional development rather than with disease.

Either an excess or a deficiency of the secretions of the internal glands may have a profound effect on the general health of the body and farreaching results on vigor, immunity, and susceptibility to disease. A physician making a periodical health examination must be prepared to recognize and interpret the more gross abnormalities of the ductless glands.

Over an experience of some years I have found that what we have dubbed overactivity or underactivity of the various glands can probably, in sixty per cent. of cases, be traced back to early periods in our patient's life, even to his ancestry. So we have come to regard a great many of these constitutional disabilities as actually being transmitted through the chromosomes, through families, generation after generation, in not always the type in which they originally appeared, but in various metamorphosed forms. The various types may succeed one another without apparent rhyme or reason.

If one wishes to analyze the situation from the beginning of the patient's own life (which is the only practical way of proceeding), this sixty per cent. of all cases that we see go back to one original type which in its developmental stages produces manifestations in every field of medicine and surgery, and involves every tissue of the body. And this type is the socalled status hypoplasticus. If what I say is true, then status hypoplasticus will repay an intensive study, for it is the recognition of this state early in life which will allow you to prognose, within limits, what is going to develop from that state, what may be expected, what can be helped, and what must be endured. Status hypoplasticus is a term which is probably better in its application than the old term, status thymicolymphaticus, for the reason that the thymus gland is not necessarily a part of it; but the thymus usually is enlarged and plays a collateral not a major part in the production of symptoms.

What is a hypoplastic constitution? It is one in which important tissues of the body are underdeveloped, small and inadequate. Those important structures that are inadequate are, in the first place, the cardiovascular system; in the second place, the series of glands—pituitary, thyroid, adrenals and gonads; and in contrast to these hypoplastic organs, we have the hyperplastic or enlarged ones, those composed of lymphoid tissue, such as the thymus, the tonsils, the lymph nodes throughout the body, the spleen and the liver.

A person that has this constitution presents then, not only these grosser aspects of enlargement or deficiency in size; but in every field, clinical and laboratory, certain minutiæ of the condition are found that influence profoundly his capacity for later survival, reproduction, and resistance to disease.

The blood picture of such a person shows no anemia; the red cell count and the hemoglobin are both normal. But in the white cells you will notice a low polymorphonuclear and a high lymphocyte count, a long coagulation time of the blood, a low blood sugar, and a low alkaline reserve.

Let us interpret these findings. In the first place, take the low polymorphonuclear count which these individuals present; they are frequently victims of infection. Some infective processes with pus formation produce in the regular cases a laboratory picture of blood that is quite significant—that is, there is a high polymorphonuclear count in the number of white cells, frequently reaching ninety per cent. and over. These status cases do not show that high polymorphonuclear count. Their count under an infection process goes up to sixty or sixty-five per cent., and then when it comes to a matter of operative procedure on the basis of the differential white cell count, you are at a loss. That happens frequently. If you recognize that a status condition is being dealt with, you can't place dependence on the differential value at all. That is the importance attached to the abnormal polymorphonuclear count in status cases.

The next important point is that the blood sugar content is down to seventy or seventy-five mg. per one hundred c. c. Now muscular activity depends upon the percentage of blood sugar that is carried to the muscles in question. If this is low, fatigue supervenes rapidly.

Further, note the long coagulation time of the blood—ten, twelve, fifteen or twenty minutes. This long coagulation time is probably, as Cannon and

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others of his school believe, indicative of the fact that the adrenal glands are deficient in function, for adrenalin will increase the coagulation power and diminish the coagulation time.

The symptoms dependent on long coagulation time are those of bleeding and purpura, particularly purpura. Part of that problem, though not the entire problem, is that of a long coagulation time. This becomes of great interest in some of the smaller injuries, for they may readily lead to secondary hemorrhages of the brain and other important structures.

Then comes the low alkaline reserve that these patients have. The tendency to acidosis is constantly present. They suffer with periodical conditions of acidosis, with sudden rises of temperature and gastrointestinal symptoms. Thus from this blood picture alone you can see what difficulties these patients have when they undertake to perform their tasks.

Studying their structure we see likewise a condition in which disabling situations arise. Their skeletal units are inadequately bound to one another and to the trunk, and so flaillike joints are produced. They have subluxations of the jaw, of the elbow, of the shoulder—the shoulder particularly. What is still more important is this: that those joints which normally should be fairly well fixed, such as the arch of the foot and the sacroiliacs, are not firmly fixed, and as a result what happens? You have a potentiality for backache which nothing relieves excepting substitution of a better ligament, namely, a strap or belt of some kind. These patients suffer from flatfoot because the arch instead of being supported, is not supported, the ligaments being loose. These conditions handicap these individuals.

Now, without dilating further upon their inadequacies, what becomes of these persons? Many of them die young, before their condition has been diagnosed at all. They die because of sudden fright; because of a sudden drawing upon their deficient adrenal glands; because of some slight infection or narcosis, such as a slight whiff of chloroform. They will have a hemorrhage of the brain or of the suprarenals, and death supervenes without any premonitory symptoms at all. Although they probably had been examined, nothing was found because nothing was known about what should be looked for in their constitutions to make of them inadequate individuals.

Those who do not die survive by what means? There is a mechanism within them, a compensatory group of structures which specifically overcome a great many of their inadequacies. For instance, if the pituitary could enlarge, there would be an increase in the blood sugar; if the thyroid and adrenals could enlarge, there would be more rapid mobilization of sugar and shorter coagulation time. In other words, there is in these patients a mechanism which if called upon automatically will overcome for that individual many of his disabling characteristics.

Now we have a great deal of evidence to show that this is exactly what happens in bringing them out of status hypoplasticus into a more normal condition.

Suppose this mechanism has been brought automatically to begin its work. It will proceed for a certain length of time—for some persons up to the point of normality; but for others only partial success will result, and so many variations will result from early death to mature normality. There are innumerable grades therefore beyond which that process is not efficient. Those patients that represent those innumerable grades from early death to mature normality are the ones you see constantly. What you must know is how far they have progressed in this compensatory process.

Let us assume that after all three of these organs, pituitary, thyroid, and adrenal glands, have proceeded on this compensation course for a period of four or five years, one of them begins to let up in its function, and has reached the point where demands are made upon it for some other specific bodily function. It then becomes for that patient relatively deficient. When puberty arrives, for instance, the pituitary gland is called on for extra work. It then becomes inadequate. We have signs of relative hypopituitarism. The patient begins to get lethargic, becomes fat, has less power of concentration, less initiative, and becomes the fat boy or girl you see about you. He becomes inadequate at the age of puberty.

That disease (if it is a disease) did not begin at puberty. It was inherent in that human being at the time of his birth. It became manifest on the arrival of puberty.

On the other hand, suppose the thyroid is called upon for overactivity, as it is by a persistent thymus gland, and puberty arrives; well, the thyroid is already active, and it becomes inefficient on account of this particular increased load it now has to carry. There arise symptoms of relative hypothyroidism, enlargement of the neck, colloid goitre, sluggishness, increase in weight, mental retardation, dryness of the skin, everything that goes with low oxidation. That did not begin at puberty. That began in early infancy or before. We did not recognize its beginnings. If they had been recognized and at that time corrected, there would have been no hypothyroidism at the time of puberty.

Of hypoadrenalism I know little, and hence I cannot tell you the effects produced in these persons when their suprarenal glands are affected because there are no methods of determining that fact so far as I know of, except that the patient presents inordinate fatigue and low blood pressures. But the large proportion of cases of pituitary and thyroid disturbances that we see at puberty or any other critical point of life at which greater load must be carried than normally, present the symptoms before outlined. These do not arise because of the last cause; that last cause is simply the match that set the fire to the magazine. The magazine was laid long before.

Practical use has been made of the facts. Marine in Cleveland dwells on the importance of recognizing that the administration of iodine early in life prevents certain types of goitre. In a similar way we can prevent other things that arise from disturbances of the internal glandular system. But when it comes to a plain overactivity or underactivity of the pituitary, the thyroid, or the adrenal, each disturbance must be treated on its own merits. There is no way that I know of by which you can tell in advance that one person is to be over or underactive in thyroidal or pituitary action excepting when he belongs to the status type.

Hyperthyroidism may be produced without symptoms of neck pressure except that an unsightly mass arises. When it comes to the pituitary

body endeavoring to compensate and enlarge, the matter is quite different. The pituitary body is situated in a skull within a skull. The pituitary fossa is formed by a fibrocartilaginous, bony structure. When the pituitary body endeavors to enlarge, what happens? Pressure is produced within this fossa and headache thereby arises. These headaches come on periodically, every time the patients overexert themselves, every time they go without a meal for a few hours, every time they are particularly fatigued, and every time they concentrate on some particular problem. Women have them before the menstrual period.

The condition can be detected if you examine the skulls with the x ray. It can be told with certainty what type of person is going to have these headaches, and we do not stop at the foretelling, but we can take measures in advance to diminish their number and intensity. These headaches often last for decades, and then gradually disappear without treatment at all. What happens is that the pituitary enlarges its fossa because it presses on the bony capsule and makes that cavity large enough to accommodate the pituitary at all times and then the headaches cease.

This is not fiction. If you watch the skulls of these patients and take serial pictures, you will find that enlargement of the pituitary does take place. Because the gland happens to be near the nerves that go to the eyes, there may be eye disturbances, such as double vision, or a ptosis; and so it is often believed these headaches are due to eye strain. Some are, but the large majority are due to just this particular process of pituitary pressure. So you see that a great many (and I have only touched upon a few of the important ones) of the endocrinopathies occurring in our practice are attributable to these early symptoms and compensatory factors of status hypoplasticus.

The Skin and Syphilis*

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There are practically no preclinical signs in the vast majority of skin diseases. They appear as a rule without warning from either the clinical or the laboratory viewpoint.

Two symptoms might, however, be mentioned which occasionally precede the outbreak of cutaneous lesions, namely, pain and itching. Strictly speaking, even these are not preclinical. Herpes zoster in a certain proportion of cases may be preceded by neuralgic pain before the appearance of the characteristic vesicles or even the slightest amount of redness. Itching or a sensation of burning may accompany a number of inflammatory diseases, but is rarely present before the outbreak of the eruption. In the disease known as pruritus with lichenification (lichen simplex) the lesions may be preceded for a variable time by severe itching. Pruritus may of course be present without ever producing any visible evidences of scratching and constitute a disease—*sui generis*.

In presenting the dermatological aspect of periodical health examinations I should like to touch upon three phases of the subject which seem to be pertinent.

1. The significance of the socalled precancerous dermatoses and of scars.
2. Some of the serious diseases whose early recognition is all important.
3. The relation of certain diseases of the skin to internal disorders, often of a more serious nature.

A large number of cutaneous affections have been incriminated as a possible source of malignancy. In this category belong the pigmented nevi, concerning the importance of which opinions seem to differ. There can be no doubt that when a malignant process begins in a pigmented mole (generally a melanocarcinoma) it is most serious. When metastases have occurred, there is no disease which is more certainly fatal. Fortunately it is a rare one. When the almost universal occurrence of small pigmented moles is considered, the chances of malignancy arising from such lesions is exceedingly small. The type of pigmented mole which is most dangerous is the flat, bluish black one. The vast majority of pigmented nevi can safely be left alone. When in rare instances they show signs of activity, they should receive immediate attention and be vigorously destroyed (cautery, electrocoagulation, etc.). When pigmented moles are situated in locations such as the bearded region where they are prone to frequent traumatism, they should be destroyed.

Among other cutaneous lesions which may be the starting point of malignant disease should be mentioned xeroderma pigmentosum, chronic radiodermatitis, senile, seborrhoic and arsenical keratoses, leucoplakia, ulcers, scars, fistulæ, lupus vulgaris, inveterate psoriasis, Paget's disease of the nipple, and Bowen's precancerous dermatosis. While any one of the above mentioned affections may serve as the origin of cancer, this is certainly not the ordinary sequence in the vast majority of cases.

The disease which best merits the appellation of precancerous is probably xeroderma pigmentosum. This appears first in childhood, chiefly on the exposed parts of the body, and bears a close resemblance to the changes produced by excessive irradiation from the röntgen ray or radium. It appears to be a form of sensitization to actinic rays and is eventually fatal as a rule from the formation of prickle cell epithelioma. The termination of severe cases of chronic radiodermatitis is well known even by the laity. Leucoplakia is by no means an invariable forerunner of cancer especially where smoking and other forms of irritation are avoided and un-

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skillful or half way methods of treatment are not employed. While cancer may develop upon a lupus vulgaris, for instance, this does not happen except on rare occasions. The same may be said of the majority of the socalled precancerous affections.

Scars of various types will be noted in the course of periodical examinations, though their significance is not always understood. The socalled spontaneous keloid is often seen upon the chest and is a well known racial peculiarity of the negro. It differs from the hypertrophic scar, which does not extend beyond the confines of the original injury. The scars of burns and tuberculosis are keloidal, banded, and deforming, in contrast to those of syphilis which are soft, pliable and small in comparison with the amount of ulceration or infiltration which preceded them. The scars of nodular (late) syphilides with their grouping in circles or portions of circles are often as characteristic as the original lesions which caused them. Scars of herpes zoster, variola, acne varioliformis and selfinflicted wounds (malingering) are generally characteristic.

There are certain serious affections of the skin whose early recognition is of the greatest importance. At this time a cure may be obtained, while if allowed to progress this may become impossible. Lupus vulgaris when appearing at the outset as a small group of apple jelly nodules upon the cheek, especially in young persons, can be excised or vigorously treated by other means. When the disease has progressed, a cure is often hopeless.

Leprosy is a disease which should be recognized early, not only for the sake of others (in communities where the disease is endemic), but for the patient's sake. Even with the modern method of using ethyl esters of chaulmoogra oil, very few lepers, in my opinion, are ever cured. In the earliest stages, however, such an event is possible. Any yellowish brown macules which are more or less definitely anesthetic, especially in persons from a leprous region, should arouse the suspicion of leprosy.

Cutaneous cancer occurs most frequently on the face where it is of the relatively benign type, which practically never metastasizes. On the extremities and genitals and about the orifices it is often a much more serious problem. While cancer of the skin may assume many forms, the most characteristic symptom is the presence of a semitranslucent waxy border. Absence of pain and a tendency to bleed easily are also noted in this disease.

Various eruptions of the skin are simply signs of internal disorders or constitute a single symptom of a general disease. Rosacea is almost invariably a sign of gastrointestinal disturbance, and the same is true of acute urticaria. Lupus erythematosus is probably due to focal sepsis, in some cases of a tuberculous nature. Eczema, furunculosis, pigmentation, and xanthoma may all be caused by diabetes. In rare instances keratoses of the feet may be due to gonoccocal infection. The rare condition known as acanthosis nigricans is an indication of internal malignancy. The dermatitis of pellagra is simply one of the symptoms of a serious disease.

While certain skin diseases are purely local conditions, others should be looked upon as danger signs suggesting a more serious underlying condition.

Syphilis is of great importance because of its well known power of imitating other forms of disease and from the fact that it may involve any of the tissues of the body. That the physician who makes a periodical health examination should be able to recognize all of the manifestations which this disease may produce, is asking an impossibility. No single individual possesses such a vast store of clinical knowledge. The early lesions of the skin and mucous membranes, which are familiar to many, are of little importance compared with the later ravages of the disease. The seriousness of syphilis lies in its late effects upon the central nervous and cardiovascular systems, and the viscera.

In making a diagnosis of syphilis too much reliance is likely to be placed upon the history, which, in the case of women especially, is notably unreliable. High social standing and eminent respectability do not preclude the possibility of this disease. Even with a positive history of a previous syphilitic infection, the possibility of a reinfection must not be forgotten. While rare, it is true, reports of such cases have increased in number since the introduction of modern methods of treatment.

The tendency to place undue emphasis on the Wassermann test is unwise. It should be given due consideration but not relied upon to the exclusion of clinical evidence. If leprosy can be eliminated, a strongly positive test indicates syphilis. A negative test, however, by no means excludes a syphilitic infection, as is frequently shown in the case of typical gummas of the skin. Examination of the spinal fluid may show a positive Wassermann test in cases where the blood examination is negative. Even the spinal examination may be negative.

In the diagnosis of syphilis nothing is of greater importance than the earliest possible recognition of the initial lesion. If every genital sore were regarded with suspicion and dark field examinations made of even the most innocent looking ulcerations, many of the later consequences of syphilis might be avoided. The early demonstration of the Spirocheta pallida in genital ulcers or in neighboring lymphatic glands, makes it possible to gain valuable time by the immediate institution of modern intensive treatment. The habit of cauterizing all such lesions and awaiting developments borders on malpractice.

In syphilis of the nervous system the symptoms will depend upon whether the meninges or the central axis is involved. In the former case there are signs of cerebral or spinal meningitis and in the latter, encephalitis, myelitis or general paresis. While involvement of the central nervous system may occur early in the disease, symptoms are generally not apparent until a considerable time has elapsed. Involvement of the cardiovascular system may give rise to aortitis, aneurysm, myocarditis, aortic insufficiency and angina pectoris. Any one of the viscera may be affected, including the lungs, liver, spleen, pancreas, stomach, intestines, kidneys and adrenals. Many of these visceral conditions are relatively uncommon and their symptomatology obscure. Frequently the diagnosis rests on the serological examination or therapeutic test. That the bones, joints, muscles, tendons, bursæ, etc., may be involved, shows the importance of keeping syphilis in mind in a periodical health examination.

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Historical Medicine

Teeth in Olden Times*

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Within historical times there never has been a period in which the teeth have not been an object of care and an occasion of pride.

Artificial teeth have been found in Egyptian mummies—the lady of King Tut's time and country had her beautiful store teeth as well as her lipstick and perfumery quite on a par with our modern flapper—indeed the only thing in which the modern Canadian can crow over her ancient Egyptian sister is in her bobbed hair. The hard boiled historian of medicine says of these old artificial teeth that they are "an evidence that dentistry and dentists are at all events as old as the coquetry for which Egyptian women were notorious" (1).

In Ancient Greece, we find the *odontogluphon* corresponding to the Latin *dentiscalpium* which the lexicographers solemnly define: *"quo ea quae dentibus inhaerent eximuntur,"* i. e., an instrument by which that which sticks in the teeth is taken out—Anglicé, a toothpick. Then there are *odontotrimma,* a dentifrice or powder for scrubbing the teeth and gums; and *apodontosis,* abstersion of the filth around the teeth. The torture of toothache is not lacking, that was *odontalgia* or the forceps for drawing teeth, *odontagra* or *odontagogon,* called by the Romans, *dentiducum,* a celebrated one being of lead. The man without teeth was *anodous,* or *nodos;* he with white teeth, *argiodous,* or *argiodon;* if his teeth were rough, serrate, etc., he was *karcharadous,* and if he had a jaw with only one tooth, that is, with the teeth grown together he was *monodous,* like the son of Prusias, King of Bithynia, "who had one bone in the place of teeth," says Festus; or Pyrrhus, King of Epirus, "who is said to have had teeth grown together." One with prominent teeth was *proodous* and one who fought with them was *odontomaches.* I do not find any specific name, however, given to dentists: although Herodotus does mention physicians for the teeth.

No one can peruse the long list of compounds of the word *odous* in Greek (2) without appreciating the high regard that marvellous people had for their teeth and the great care they took of them. Cicero, indeed, tells us that the third *Æsculapius* was the first —so they say—to discover toothdrawing (3). But the practice was not approved unless absolutely necessary: three hundred years before Christ the aphorism already had vogue "don't pull, cure": and it was almost a binding rule never to extract teeth unless they were so loose as almost to come out by themselves (4). The celebrated Erasistrates whose most marked characteristic was aversion from bloodletting recommended that forceps should be made of lead so that no tooth should be drawn that was not so loose and wobbly that it could be drawn by lead forceps, that is without any force or violence—one rather wonders what he would have said to the diabolical turnkey which every doctor had half a century ago. Forceps of lead were openly displayed in the Temple of Apollo, the God of Healing (5).

Hippocrates, the father of medicine, advises that in toothache where the tooth is carious and loose, it should be extracted, but if the tooth aches without being carious or loose, it should be burned (6)—this was done by passing a red hot iron lightly and rapidly over the gum. Hippocrates never extracted unless it was absolutely necessary.

When we reach Rome we are on pretty firm ground: it does not seem to be certain when and where artificial teeth were invented: but by the times of Martial (A.D. 43-104) they were certainly in use. The satirist, addressing an old girl, Galla, after gibing her for wearing a wig and using paint, says—"and at night, lay aside your teeth like your silks" (7).

The same satirist indicates that a whole set of teeth made of bone or ivory could be procured. Addressing Fidentinus who aspired to be considered a poet, Martial asks:

"So, Fidentinus, you wish to be considered a poet by means of our verses and hope to be believed? That's the way Aegle seems to herself to have teeth, bone ones bought or of Indian ivory—that's the way the painted Lycoris who is blacker than a falling mulberry seems to herself to be all right—and you by the same logic as that by which you make yourself out a poet, will have long hair when you are bald" (8).

These sets of teeth were bound together by gold wire and in some way attached to the gums (9).

Celsus who lived about the beginning of the Christian era at Rome, and who was an authority in medicine almost to our own times, was of much the same opinion as Hippocrates not to pull a tooth unless it was too wobbly but to burn the gum—he advised to fix the loose teeth and tie them to their neighbors with gold wire (10). Celsus has a good deal about teeth; he advised bursting hollow teeth by peppercorns pressed into them, and seems to have been well acquainted with the results of extraction in cases of ankylosis of the teeth and alveoli, caries and necrosis; his plan was to shake the tooth loose, most painfully, before applying the forceps (11)—not quite our modern local anesthesia.

It would be wearisome even were it possible to trace the progress—generally downward—of the science of the teeth through the Middle Ages—let us make a rest at the fourteenth century.

Much of the knowledge and skill of the Romans was lost but there undoubtedly were dentists—of a sort. So far as can be made out they seem to have been mostly employed in drawing teeth but toward the end of that century we find a remedy for toothache, a gargle with a decoction of sage leaves (12).

*Read before the Academy of Dentistry, Toronto.

François I who came to the throne in 1515 had a dentist (13), so far as I can find the first royal dentist named as such—his Royal Physician Dr. Jean Goeurot paid much attention to the teeth and had a crowd of remedies for toothache which he characterized as the most annoying of all sufferings. He recommended to hold in the mouth camphor water or a decoction of camphor in vinegar, and to put in a carious tooth, a little cotton soaked in the oil of spikenard, to gargle with a decoction of camomile, mint and rue in hot wine.

For cleaning the teeth, the base of all the preparations was deers' horn.

About the same time Erasmus in his *Civilité* published in 1530 tells us that many different powders were used for that purpose; some rubbed the teeth with salt and alum and "many persons had the strange custom of cleaning the teeth with their own urine" (14). Laurent Joubert, Royal Physician to Henry III, preferred to this, wine diluted with water: and most will agree with him (15).

The cures for toothache were endless. Brantôme tells us that the Queen of Spain had sent him when he had the toothache, "a very singular herb—when he took it and held it in the hollow of his hand, the pain suddenly ceased" (16)—the same phenomenon has been known to appear in modern times on approaching a dentist's office or on the exhibition of forceps by the dentist. The marvellous herb was the dictamnus. Another used cotton soaked in oil, others pepper, cloves, sage, spikenard, poppy, mandrake, hyoscyamus—some applied to the temple a plaster of gum elemi (a stimulant gum obtained from various kinds of trees) with a little powder of cantharides: "It's a marvellous thing, the effect of this remedy," says the enthusiastic writer. Some advised bleeding: the celebrated Guy Patin writing June, 1661, says: "I had a severe toothache yesterday which compelled me to have myself bled on that side: the pain instantly ceased as by a kind of enchantment. I slept all night: this morning the pain returned a little: I had myself bled on the other arm and was immediately cured" (17)—which looks like neuralgia.

Tobacco or snuff was also "a marvellous" remedy to relieve toothache.

As to caries, in addition to the excrements, fluid and solid, of the wild cat ("approved by two of the Regents of the Faculty of Medicine" in Paris (18)) there was used a vegetable essence whose composition is alas! concealed from us.

A certain Sieur Rebel in 1540 brought from Egypt "a water which destroyed toothache on the spot—it takes one by the nose and makes one weep abundant tears"—but a phial of four doses cost a louis d'or (19). As a louis d'or was worth intrinsically about four dollars and sixty cents, equivalent to some seventy dollars at the present time, it will be seen that the remedy was rather dear—but who with the toothache and the money would hesitate?

In the country we are told that a very favorite remedy was to rub the tooth with the tooth of a dead man (20).

Local anesthesia is not a new discovery. Writing in 1610, de Courval (21) tells us how a certain charlatan tooth drawer proceeded—he used no instrument but his two fingers, the thumb and the index finger, "before drawing the tooth which the patient wished removed he touched it with his two fingers on the point of one of which he, talking all the time, placed a little narcotic or stupefying powder, so as to put the part to sleep and make it insensible and without feeling. And on the other finger he put a powder marvellously caustic, which had so rapid an operation that in the very moment he made a cut or opening in the gum, it displaced and uprooted the tooth so that as soon as he touched it with his two fingers only he extracted it and sometimes it fell out without being touched." What these powders were we are not told; but the author assures us that it was impossible for any pain to appear "by reason of the said narcotic powder which was placed there at the same time as the caustic, the one on one side of the gum and the other on the other"—*Credat Judaeus Apella.*

However, the author informs us: "It is an assured fact as I have heard said by persons of standing and trustworthy, that most of those whose teeth were drawn by this charlatan afterwards fell into great fluxions and catarrhs by reason of the attractions which had been excited in these parts by the said violent powders: And with some all the teeth fell out, so that having determined to have only one or two drawn, they were thunderstruck to find that they lost nearly all—a thing miserable and deplorable!"

Now, that man was a quack: but the regulars were not without their anesthetic—here is the formula:

Take two ounces of red roses, boil them for a day and a night in strong vinegar: then dry them: take enough and put on the tooth and it will fall out (22).

Here is another: Boil and then reduce to a cinder, earthworms: fill the hollow tooth with that powder and close it with wax. It will fall out (23).

I have spoken of regulars—for there were regular dentists. The profession of surgeons, indeed, were advised not to draw teeth, especially those who used the lancet frequently. The celebrated Peter Dionis (24), Surgeon-in-Ordinary to Maria Teresa, Queen of France, in his work on Surgery says of tooth pulling: "That operation consists only in the effort the wrist must make to pull the tooth: the effect is redoubled when the tooth resists and the operator does not loose hold till the tooth is extracted. That is why the surgeons who have much bleeding practice and who wish to keep the hand light and firm, should never draw teeth for fear that the exertions they must make should render the hand trembling: that work is to be left to operators who perform it daily and who have no other way of making a living"—which may be considered a blow beneath the belt for the primitive exodontist.

The learned author gives another reason: "If I advise the surgeon to abandon that operation, it is not solely by reason of the injurious effect on the hand, but also that seems to me to partake a little of the charlatan and mountebank. In fact most of these extractors abuse their ability in order to deceive the public, making believe that they need only their fingers or the point of a sword to extract the most firmly rooted teeth. But a surgeon should never recognize these tricks of dexterity: and as probity should be the rule in every action, he should keep himself aloof from those who wish to impose on others."

This indicates what the fact was, that many extractors were quacks rather than surgeons; they be-

came so notorious for lying that there was a proverb: "Lies like a toothdrawer."

The Pont-Neuf seems to have been one of their favorite stations: but they were seen at every fair. One of the most celebrated tooth drawer was Jean Thomas, generally called Grand-Thomas: he had, indeed, studied surgery and been admitted Master and he practised with the license of the faculty. He was tall and stout, had the voice of a stentor, bore a red coat trimmed with gold and a *bicorne* or two cornered hat adorned with peacock feathers. He has an enormous sword at his belt and was recognized from afar by his gigantic height and voluminous clothes: he stood on a steel car with four wheels and roared so loud that both sides of the Seine resounded. He had medicine for several diseases (25) but shone chiefly as an extractor of teeth. His star reached its zenith of glory in 1729 when the Queen of Louis Quinze, Marie Leszezynska, daughter of the exiled King of Poland, gave birth to a Dauphin (26). He announced amid the general rejoicing that for fifteen days he would draw the teeth of every one presenting himself and that on Monday, September 19th, he would give a grand open air banquet on the Point-Neuf—the police cruelly stopped the banquet.

Although Dionis advised surgeons not to draw teeth, he did it himself sometimes; and this is how he set about it: "You make the patient whose tooth is to be extracted, sit upon the ground on a cushion (*carreau*); the operator places himself behind him and having caught his head between the two thighs he raises it a little. The mouth of the patient being open, he takes note of the defective tooth so as not to take hold of one instead of the other; then after laying it bare, he separates the gum from that tooth which he then seizes with the instrument which seems to him most suitable. . . . When there is no failure, the patient spits out the tooth with the blood from the gum."

Dentistry made great strides in the eighteenth century: the kings, queens, princes, and princesses with many of the nobility had their own dentists, generally men of talent and education, who were determined rather to save teeth than extract them. There were women dentists; but in 1755 women were forbidden the profession although at that time Paris had only about thirty dentists in all. In 1768 regulations were made for admission as an expert in the care of teeth.

(*To be continued*)

Contributors to the Science of Medicine

Claude Bernard

Claude Bernard, a contemporary of Pasteur, almost rivalled that great man in the discoveries he made which changed, to a great extent, long held views of physiology. He discovered glycogen and the working of the vasomotor system.

Before giving a short account of the results of his researches, however, it will be in place to run over briefly the history of his early and young life. He was born in 1813 in the little village of Saint Julien in the Rhone valley district not far from the town of Villefranche and not very distant from the city of Lyons. This is a wine growing region where his father owned a small estate planted chiefly with vines. This little property came eventually into Bernard's hands and in his later years he used the paternal cottage as a summer residence during the vacations. In this out of the world spot Claude Bernard was brought up in a homely way, as his parents were quite poor and received his education at the Jesuit School in Villefranche. When he had absorbed all the learning taught at this school he went to Lyons, with the idea of completing his studies and obtaining the baccalauréat. However, he stayed there but a short time and began the battle of life. He took a situation with a pharmacist at Lyons where he remained for two years or so. Some of the methods of business practised by the proprietor of this shop so disgusted Bernard that he forthwith relinquished his ambition to become a pharmacist and turned to dramatic art. He wrote a vaudeville comedy which was accepted and had a fair success on the boards. He then set himself to the serious work of writing a historic piece of a lengthy character and with this in his pocket determined to seek his fortune in Paris. Two students as poor and ambitious as himself went to Paris at the same time arranging to meet him there. They met quite by chance some time after in the Place du Panthéon, in front of the well known inscription *Aux grands Hommes la Patrie reconnaissante?* And while the omen did not hold so good for the other two as for Bernard, yet one became a bishop and the other a director of railways. In spite of the fact that in his *Arthur de Bretagne,* his great tragedy, Giradin discovered much promise, he dissuaded him from following a literary career and advised him to study medicine.

Bernard took this advice, and began his career as a medical student under discouraging auspices. He was very poor and eked out the extremely scanty allowance sent by his parents by giving lessons and living in the most frugal manner. Bernard worked with zest at his medical studies, especially devoting himself to anatomy and physiology. He soon made himself a master of what physiology was known at the time. The entire subject was in a state of vagueness and obscurity. For some time, however, he attracted little attention. To the professors he appeared somewhat idle and inattentive, although really he was analyzing and dissecting their lectures and soon found flaws in their reasoning.

In the fifth year of his studies his opportunity came. He was appointed in 1839 intern at the Hotel Dieu and was allotted to Majendie, the leading physiologist of France and perhaps the foremost of

Europe. Bernard's first contact with Majendie was by no means encouraging. The professor was abrupt in manner and took little notice of his new intern, it is said that he did not even know his name. But the extremely skillful way in which Bernard carried out dissections impressed the master, and one day, soon after Bernard had joined the hospital, Majendie called out suddenly to Bernard busy at a dissection, "I say, you there, I take you as my preparateur at the College de France." Needless to say Bernard jumped at the chance and from then on it was comparatively smooth sailing for him. Bernard's career as a physiologist may be said to date from that time, 1841. It may he noted that physiological science was then at a low ebb.

In 1843 Bernard published his first communication which he followed in December of the same year by his *Thèse pour le Doctorat en médecine,* having for title *Du suc gastrique et son rôle dans la nutrition.* This showed the trend of the investigations of the man who afterwards was known as the father of endocrinology. This paper led the way to the discovery of the glycogenic function of the liver and is further interesting as containing the record of an experiment which has since become classical, that of the simultaneous injection of potassium ferrocyanide and ferrous sulphate, by which is shown that the acid of gastric juice makes its appearance on the surface and not in the depths of the gastric glands.

He next turned his attention to the properties and uses of the pancreas. But it was not until 1856 that he published the complete *Mémoire sur le pancreas et sur le rôle du suc pancreatique.* Up to this time little was known of the part played by the pancreas in intestinal digestion. Indeed the great advance of knowledge in this direction we owe in the main to Bernard. The publication of this memoir brought the young physiological inquirer of Paris into the limelight, not in France only but in all lands in which science was studied. This was but the forerunner of his immortal discovery. As said before, knowledge of the pancreas and of the chemistry of nutrition in general was vague when Bernard took up research work on the physiology of sugar. It may almost be said that he came upon his great discovery by chance, because he found sugar in the hepatic vein when by the knowledge of the time no sugar should have been there. With the genius of the true inquirer, Bernard asked himself why, and proceeded to discover the cause.

After making long investigations he felt justified in making known to the world that the liver is capable of producing sugar, not brought to it as sugar in the food, that sugar makes its appearance in the liver itself by an act which seems very analogous to the act of secretion by a secreting gland, and which therefore might be termed an internal secretion. He followed up these investigations further and finally proved that the liver produces sugar by means of a mechanism analogous to that of secretion at the expense of the elements of the blood traversing the hepatic tissue. He finally isolated glycogen. As a link in the chain of special problems concerned with digestion and nutrition the value of this discovery is inestimable, and as Sir Michael Foster said, "No less pregnant of future discoveries was the idea suggested by this newly found out action of the hepatic tissue, the idea happily formulated by Bernard as "internal secretion."

The study of the internal secretions, while as yet only in their adolescence, has opened already a wonderful vista and we are on the threshold of discoveries which may and probably will alter our conceptions of medicine and its practice. It is thought by many that the key of the riddle of health and disease is in a definite knowledge of the internal secretions and their exact rôle and mode of action. The discovery of insulin was a step in the right direction and it seems that like discoveries and great are in the womb and will in due course be brought forth. The key of this riddle was found and partly turned by Bernard, other investigators have turned it further, till finally when the key has been fully turned the riddle will be made clear to the advancement of the human race physically and mentally.

In commenting on Bernard's work on glycogen, Foster truly says: "It has been the fate of many other men in many matters to have merely laid a foundation on which other men have built. Bernard, in the matter of glycogen, not only laid the very first stone, but left a house so nearly finished that other men have been able to add but little."

Another outstanding discovery made by Bernard was that of the vasomotor system, which in point of importance hardly ranks second to the discovery of glycogen. In this discovery, however, he did not take the leading part nor pursue his first line of investigation so persistently as was the case with glycogen. Others first recognized the importance of his earlier result, the vasomotor function of the cervical sympathetic. He discovered it somewhat accidentally. He was looking for something else, and did not, as he did with glycogen, relinquish the line of inquiry which he had originally laid out for himself, and give himself up to the new line of inquiry. He thought he was "off the track," so to speak, and it was only because of the interest which others manifested in the intercurrent vasomotor phenomena that he was persuaded to continue along this line of investigation. Brown-Séquard, who was living at the time in Philadelphia, interpreted the significance of the phenomena and unhesitatingly completed the vasomotor proof. Later on Bernard, quite independently of and apparently in ignorance of Brown-Séquard's results, himself also supplied the second half of the vasomotor proof.

Bernard made a close study of poisons and made many experiments in this kind of research. With regard to curare he found out some valuable facts. He also analyzed the physiological action of carbonic monoxide gas and discovered the why and wherefore of its extremely poisonous effects. Many other results Bernard arrived at, such as the socalled paralytic secretion, the supposed reflex activity of the sympathetic ganglia and others. One observation of his perhaps deserves notice. In the fifties, biologists, especially in France, were deeply concerned with and discussed with considerable vehemence and with a high degree of acidity, the question of spontaneous generation, a question which Pasteur decided once and for all time. In 1858 Bernard took part in the discussion and showed that the growths which readily appear in a solution containing gelatine and dextrose exposed to the air, do not appear if the

solution be supplied exclusively with air which has passed through a red hot tube. He argued that the growths which usually appear are not spontaneous in origin but have their source in air borne germs, and the red hot tubes killed the germs on their way to the solution. According to Foster much of Pasteur's refutation of the spontaneous generation theory was on the lines of Bernard's experiment.

Nearly all the great achievements of Bernard's career were accomplished before he was fifty years of age, indeed his two greatest discoveries were made before he was forty years old. And in this connection, too, the point may be emphasized that Bernard did his work and solved problems under conditions which are incredible to research workers of the present time. In the first place he had to contend with almost grinding poverty and endure privations of the most severe kind. In addition, his working hours were beset with difficulties. The laboratory in which he worked under Majendie, if it could be called by such a high sounding name, was a dark, unwholesome room in the lower story of a building referred to as a damp and dark lair, the apparatus provided was elementary and wholly inadequate for the purpose and also experimental physiology was eyed askance. The path of the physiological investigator in those days was strewn with thorns. Not for Bernard nor Pasteur, although the research worker in chemistry enjoyed better facilities than the physiologist, was there a well equipped laboratory with adequate apparatus with a master who trains the probers of the mysteries of medical science in technic and suggests and guides the line of work. Neither in Majendie was found such a master, but rather an abrupt and rude man who left his assistant very much to his own devices. As a matter of fact Bernard had to carry on his experimental inquiries in some temporary laboratory of his own, or in that of one of his chemical friends.

Both Bernard and Pasteur made their world famed discoveries in circumstances which would discourage, nay appall, laboratory workers of this day, and yet it is a moot question whether they did not benefit by these hard conditions. They were imbued with a real passion for science and thrown upon their own resources, often invented or even made their apparatus, and lacking the guidance and suggestions of a master evolved from their own inner consciousness together with the insatiable curiosity of the born investigator, their discoveries. They wanted to know why and found out for themselves. And often when they went astray they found out something they were not looking for. It is futile to moralize as to discoveries in science but it sometimes seems that the greatest discoveries made are in proportion to the difficulties met with. The greater the obstacles to overcome the greater the discoveries. Bernard possessed an intuitive perception or was led by a sort of inspiration to anticipate conclusions which it took patient plodding workers months and sometimes years of laborious study to reach. He reached the conclusion leaving the gaps left on the road to the goal to be filled in afterwards either by himself or by some other person.

In 1847 Bernard stepped into Majendie's shoes as deputy of the College of France so that he was provided with better facilities from that time on. His domestic life, unlike that of Pasteur, was not happy.

In 1855, on the death of Majendie, Bernard was made a full professor at the College of France. He worked incessantly during the next few years. While extending and completing his discoveries, at the same time he gave lectures at the College of France and at the Sorbonne and he largely used these lectures as a means of making known new results. These lectures were published eventually under the names of *Leçons de Physiologie Experimentale, Leçons sur les effets des substances toxiques et medicamenteuses, Leçons sur la physiologie et la pathologie du systeme nerveux,* and so on. In all, these lectures form seventeen octavo volumes. In 1862-63 his health broke down. The exact nature of the malady was not diagnosed but it was probably appendicitis. Off and on he suffered from it until 1867 when he had an acute attack and the abscess appears to have discharged into his bowel. He recovered slowly and became strong again. In 1862, when his health seemed to be definitely failing, he betook himself to his native place where he had continued to hold his small ancestral estate. When, however, health and vigor returned country pleasures and occupations began to pall although while in the country he wrote a book entitled *Introduction to the Study of Experimental Medicine.* Bernard was a pioneer in that science which now belatedly appears to be coming to the fore, namely, that of comparative physiology and pathology. Towards the close of his life he was drawn more and more to those fundamental properties of living bodies which may be observed alike in animals and plants. In 1864 or thereabouts the Emperor Napoleon III, who wished to be regarded as a Mæcenas and especially to men of science, invited Bernard to take part in the festivities of Compiègne. Bernard accepted and paid the visit in company with Pasteur. A few days afterwards the Emperor sent one of his ministers to inquire of Bernard what could be done for him. "For myself," said Bernard, "I want nothing; but my science is in great want of proper laboratories." As the result two well equipped laboratories were established, one at the Sorbonne and the other at the Museum d'Histoire Naturelle at the Jardin des Plantes in connection with the chair of Physiologie Generale which was being instituted for him there and into which he entered in 1868. At about that time he was admitted into the Académie Française and in 1869 the Emperor made him a member of the Senate. He lived alone and went very little into society.

Bernard's appearance was in keeping with his great reputation. He was a tall man of noble and dignified presence and his conversation was particularly brilliant. In 1877, the last year of his life, he made three contributions to the Société de Biologie, one on animal heat, the other two on the gastric juice. He also contributed three papers to the Académie des Sciences, all three dealing with the old subject of the glycogenic function of the liver.

When working in his laboratory at the end of the year 1877 he was seized with a chill which ushered in an acute affection of the kidneys and he passed away on February 10, 1878. He was accorded a public funeral and was the first man of science in France to be laid to rest in the Cathedral of Notre Dame. Undoubtedly Bernard was one of the greatest men of science produced by France.

Editorial Articles

EVOLUTION IN SCHOOL HEALTH WORK

Evolution in school work in this country has gone along after the manner of movement of the crawfish.

It started with the employment of a physician to examine and prescribe for the health of college students. Thence, after a lapse of a half century it descended into the public schools, and now after another quarter century it is being applied at the root of things,—to the child before entrance to school. In school work the physician was, at first, a mere searcher after vermin, the possessors of which were expelled from school. Today he is getting down to fundamentals by determining the condition of the machinery and the nutrition (with all that goes to make nutrition) of the young aspirant for mental enlightenment.

There were very few results from mere medical inspection, for the average parent was not much impressed with a note saying that Johnny was out of fix and something had better be done about it. The school nurse was next brought in, chiefly to treat cases of verminous infection, but also to visit homes of parents who did not respond to the simple note from the principal. She got much better results but with an unnecessary waste of shoeleather and time.

In the present phase it has dawned at last that the parent is more interested in the child than are the school doctor, school nurse and school mistress; also someone was discerning enough to realize that the parent knows more about the past history and habits of the child than anyone else and that these matters are of importance. In England, where parents were first invited to be present at the examination of the child, a large percentage respond. Even in the city of London eighty per cent. of parents are present at the first examination.

The parents not only furnish valuable information regarding the child but they see the examination, come in touch with examiner and teacher and do not need to receive either notes from principals or visits from nurses. They know what it is all about and are glad to fall in with the intentions of the schools.

In the beginning the physician was everything in medical inspection. Only he could detect a decayed tooth, a hard of hearing ear, a badly visioned eye, or a nonfunctioning nose. Only he could know when a child was acutely sick. Later, much of the routine work of examining was reluctantly and fearfully entrusted to the nurse. Recently it has dawned that the teacher who is most familiar with the children and sees them from day to day is really better placed to observe what is wrong with them, at least on the surface, than anyone else. The nurse and physician become clearing officers and advisors, and their time is saved, and public money economized. After three quarters of a century of floundering in the wilderness we are really getting down to the root of things as regards the health of the school child and we are doing things in a sensible fashion.

DIATHERMY AND GONORRHEA

The treatment of gonorrhea is in many respects unsatisfactory. For example, the treatment by irrigation, external applications or vaccines in the case of the joints, the cervix uteri and urethra in the female and the prostate in the man is not altogether encouraging. Diathermy in the treatment of gonococcal infection has been on trial for some time, and many of those who have employed this form of treatment have reported good results. Mr. E. P. Cumberbatch, of St. Bartholomew's Hospital, and Mr. C. A. Robinson, of the West Middlesex Hospital, London, heads of the electrical departments in these hospitals, have written a book on the subject, which has been published recently by William Heinemann, London.

They have had very fair success in the treatment of several conditions due to gonococcal infection, perhaps, especially so in the treatment of gonococcal arthritis, but the most interesting part of the book is that in which the authors discuss why diathermy exerts its beneficial action. It does not seem to be the heat alone for it is doubtful whether they have ever heated the interior of large joints such as the knee to a temperature as high as 113° F. Yet they have been able to obtain cure or arrest of gonococcal arthritis in the knees by applying diathermy to the joints only. Again in the case of the prostate, it is very doubtful if they have ever heated the whole of this gland to a temperature of 113° F., nor have they subjected it to this temperature for as long as thirty-seven minutes on any one occasion. Yet they have been able in cases of gonococcal arthritis to cure or arrest the latter by applying diathermy to the prostate only.

Therefore, they think it is probable that the disappearance of gonococci from the infected tissues and the relief of symptoms are due not wholly to the direct action of the heat on the invading organisms, although it is certain that the heat diminishes the vitality of the gonococci, if it does not kill them. They are of the opinion, however, that the heat must also increase the powers of the tissues to exterminate

the invading organisms. A heated part gains an increased blood supply. Heat also increases the power of the tissues to form antitoxins. Since the heat produced by the diathermy current is actually generated within the tissues and not applied to the surface, it can increase the blood supply through the infected parts. The authors consequently hold, that the therapeutic power of diathermy in gonococcal infection is due to the action of heat not only on the organisms but on the tissues, the action being hostile to the invaders and helpful to the invaded.

In short, it stimulates the natural defenses of the body to fight as vigorously as possible to protect itself. This view of the action or part of the action of diathermy is very interesting and is quite in accord with the most recent views of therapeutic treatment in general. A drug does not attack directly the invading organism and destroy it or lessen its power for evil as was once believed of some of the most powerful drugs, salvarsan, for instance, but stimulates the defensive functions of the body to fight. If they cannot be stimulated to fight successfully, because vital resistance has been too greatly weakened by the virulent or protracted nature of the attack or perhaps by both of these, treatment fails; if otherwise, a cure is effected or at any rate relief given. It seems from the account of treatment by diathermy in the book by Cumberbatch and Robinson, that their experience of such treatment fits in with the most modern ideas as to therapeutic action.

SEMEIOLOGICAL VALUE OF MUCOUS POLYPI OF THE UTERUS

Mucous polypi of the uterus are not to be regarded as benign lesions and to be removed by simple ablation, because in most instances they accompany some other morbid process of the uterus—metritis, fibroma, cancer—and are occasionally the first clinical manifestation of the latter. For that matter this is merely a particular case of a general law of gastric, urinary and otorhinolaryngological pathology, which shows that polypi accompany diseases of the sinuses, inflammatory or malignant, and gastric, intestinal and bladder processes, as well as ureteritis.

The coexistence of mucous polypi and various types of metritis is well known and should lend to the treatment of the latter. On the other hand, it must not be forgotten a mucous polypus may be symptomatic of, and the only objective sign of, uterine cancer, either of the body or isthmus of the uterus.

The frequency of lesions of the uterine mucosa accompanying the growth of fibromata—hyperplastic, congestive or fungous—is common knowledge, so that the coexistence of mucous polypi and uterine fibroma is, *a priori*, not astonishing and clinically the former may be the only objective evidence of the latter process, usually a latent submucous fibroma.

Therefore, in practice submucous uterine polypi offer a great prognostic value which must not be underestimated and when met with a uterine lesion should invariably be suspected and searched for and thus the causal lesion, of which the polypus is only a symptom, can be properly dealt with.

BODY BUILD

There are as wide ranges of metabolic peculiarity in man as is shown between a razorback and a Berkshire pig. Davenport, in his recent study of *Body Build and Inheritance* finds that these peculiarities with their resultant products of slender or heavy types of structure, or of leanness and fatness, are decidedly matters of heredity.

In a time when too much is being made of height weight indices as measures of nutrition, some of his conclusions are of interest as supporting opinion from common observation.

"There is a marked tendency for persons of similar build (or with potentialities for such) to intermarry. Dissimilar builds are selected against. Two slender parents of slender stock have rarely any progeny whose index exceeds 2.2 or just above the upper limit of the slender group. In general, the progeny of slender parents are relatively slightly variable.

The offspring of two fleshy parents are twice as variable as those of slender parents. The hypothesis is indicated that, genetically, build is controlled by multiple factors, with fleshiness tending to dominate slightly over slenderness.

The diseases associated with very slender and slender build are: tuberculosis, pneumonia, nervousness, melancholia. The diseases associated with very fleshy or fleshy build are: diabetes, nephritis, apoplexy, and arteriosclerosis and paralysis accompanying it; also diseases of the alimentary tract.

Davenport gives instances showing that food intake and build often far from correspond, but no one has explained why this is the case.

"Whatever the fundamental cause may be," he concludes, "the fact remains that in certain families there is a widespread inclination to the production of slender individuals, while in fraternities certain proportions (though usually not all) of any fraternity are fleshy or obese." Perhaps the two kinds of individuals do not metabolize their food in the same way. In any case we can not disregard the constitutional factors in build.

"Looking at the matter broadly, we can see that no other theory than that constitutional differences as well as nutritional differences determine build is sufficient to meet all the facts."

PLANS FOR PHYSICIANS' HOME

A national movement, the first of its kind in America, is under way to establish an endowment fund to build a physicians' home where aged, indigent and decrepit physicians may spend their latter days in comfortable and tranquil surroundings, and where younger men who need medical treatment and have not the wherewithal to afford it may receive the best at small cost. The project has received the official sanction and backing of the American Medical Association and of the New York State and County Medical Societies, as well as that of most of the leading physicians of the country, including Dr. Charles H. Mayo, who is head of the Committee of Sponsors in charge of the campaign. Many interested laymen also are contributing.

The physicians' home is by no means a new experiment, for a few years ago one unit was established at Caneadea, N. Y., through the generosity of Dr. Stephen V. Mountain, who donated the property and building. This unit has had so great a success that the directors believe it to be their duty to enlarge the scope of the enterprise because of the large waiting list for the Caneadea Home. The sum necessary to build the home has not as yet been determined, but it must aggregate several millions of dollars in order that the upkeep through interest may be guaranteed, not only of the main national home, but of the smaller units to be established in various states. National headquarters for the campaign have been opened on the twenty-second floor of the Times Building, New York City. Checks should be drawn to the order of the Physicians' Home, Inc., and should be forwarded to Dr. Albert G. Weed, National Treasurer, Times Building.

The general plan of the home provides for the care of a thousand or more physicians at the central home, and a dozen or more at each branch. The funds donated will be invested in bonds of secure and high earning value in order to assure an adequate return in interest for maintaining the home and the units without recurring appeals to the medical profession or others interested. The name Tranquillity has been tentatively chosen for the home as most fitting and suggestive of its projected character. It will be constructed and the grounds laid out so as to typify and provide a real home where all the creature comforts essential to health of body and peace of mind may be found. One feature will be a laboratory where resident physicians may continue investigations and study, thus enabling them to continue their contributions to medical science and at the same time to enjoy pleasant and beneficial occupation of mind and body. Another feature of the home will be provision for the wife and other dependents so that families may remain intact.

At present the plan is to inaugurate the campaign with a banquet in New York City to which the profession generally will be invited, as well as prominent lay men and women interested in the project. Many well known speakers will take part in the campaign. The officers and directors of the Physicians' Home, Inc., are Dr. Robert D. Morris, president; Dr. William H. Dieffenbach, vice-president; Dr. Albert G. Weed, treasurer; Dr. Silas F. Hallock, secretary; Dr. Warren Coleman, Dr. Max Einhorn, Dr. Wolff Freudenthal, and Dr. Ralph Waldo, all of New York; Dr. J. Richard Kelvin, of Brooklyn, and Dr. Stephen V. Mountain, of Olean, N. Y.

The Medical Journal and Record is glad to extend its hearty approval and endorsement of the project for the Physicians' Home, Inc., for no cause could be worthier than that of providing rest and comfort for the medical man who has given his life and energy for the sake of the welfare of humanity.

Obituary.

EDWARD W. WALKER, M.D.

Cincinnati

The death of Dr. Edward W. Walker on October 7th removed a prominent figure from the medical profession, not only in his home, Cincinnati, but from the whole of the Middle West, throughout which section of the country his work was particularly well known.

Dr. Walker had been ill for some time with a general breakdown after his long and useful life of seventy-three years. His specialty was surgery, and his name will always be associated with those of three others of the most noteworthy surgeons of Cincinnati, Dr. C. S. Muscroft, Dr. P. S. Conner, and Dr. N. P. Dandridge, with the last of whom he was instrumental in founding the Children's Hospital of Cincinnati.

Dr. Walker was a graduate of Harvard University, and took his degree in medicine at the Medical College of Ohio, Cincinnati, in 1877. After a brief internship, he went to Europe, where he studied in some of the leading medical institutions. When he returned to Cincinnati in 1886, he was made demonstrator in pathology at Ohio Medical College, and later appointed to the chair of surgery and pathology at Miami Medical College. He served later as a member of the Cincinnati Board of Health, was professor emeritus of clinical surgery at the College of Medicine of the University of Cincinnati, staff physician at the General Hospital, and served several terms as president of the Cincinnati Academy of Medicine. He was also associated with the Ohio State Medical Society, the American Medical Association, and the American Surgical Association. Dr. Walker was also prominent in Masonic circles, and a member of many political and welfare organizations of Cincinnati.

New York Academy of Medicine's New $2,000,000 Citadel of Public Health

JOHN WALKER HARRINGTON
New York

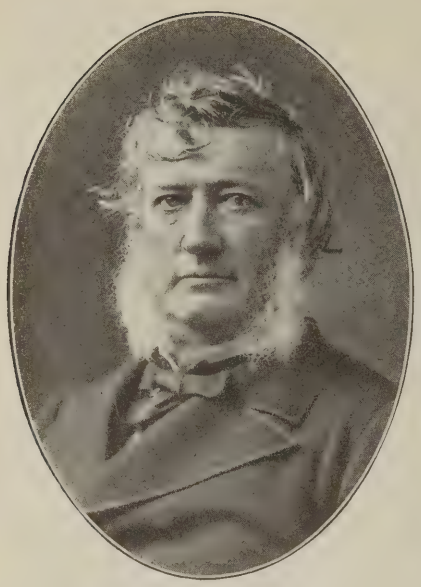
With its library, the second largest of its kind in the country and its historic collections open to the laity, and its ceaseless activities for humanity, the New York Academy of Medicine's new $2,000,000 citadel of the public health, the cornerstone of which was laid last week, will have an unusual appeal, popular as well as professional.

Therapeutics makes good its ancient lineage from the Greek *Therapos,* a servant, in every detail of its plan. When it is finished an appropriate inscription for the door lintel would be that suggested from the motto of a princely crest: "I serve." The structure will be dedicated, in effect, to the American people, for the most of the building fund came from pioneers of two great American industries and many treasures of science and art to be transferred from the present quarters, were donated by men and women outside the medical profession.

It was a small beginning from which grew this institution which has had so wide an influence on the physical well being of the American people. The inhabitants of these United States, when the new New York Academy was born, were accounted a most sickly race. They were so pale or yellowfaced, so thin, and so dyspeptic, that distinguished foreigners grew eloquent over their general debility. As was said of Rufus Choate, the average American had no constitution to speak of and just managed to squeeze through life under the bylaws. James Ford Rhodes in his *History of the United States* referring to the poor condition of the citizens of this land of the free, quotes Harriet Martineau as declaring that here the feeling of vigorous health was almost unknown. Thackeray wrote from New York that "the ladies were as thin as greyhounds," and Dickens, stopping in our eastern metropolis commented upon the hogs which then constituted its street cleaning department and gave patronizing advice about hygiene. Emerson, when in England in 1847, alluded publicly to "the invalid habits" of his fellow countrymen. Pleas of illness were made everywhere, and even when two New Yorkers met, their salutations of "How's your health" were cues for a symptom symphony.

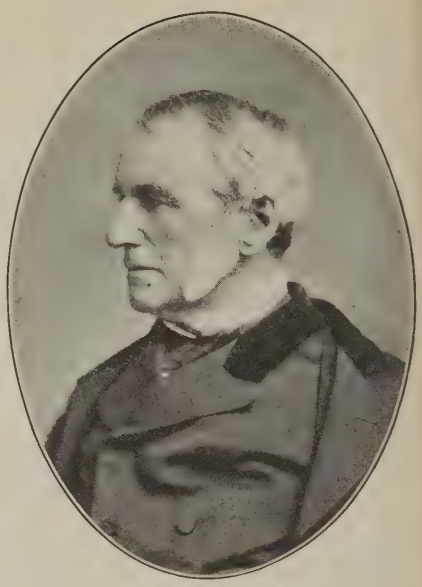
The New York Academy of Medicine was started when the new light of preventive medicine was dawning, and it proved a helpful guide.

There were several small social clubs or coteries among the physicians of New York in the "Fabulous Forties" and most of their members also belonged to the Society for the Relief of the Widows and Orphans of Medical Men, which still exists. There had been an academy of sorts some years before the



FORDYCE BARKER, M.D.

ALFRED LEE LOOMIS, M.D.



WILLARD PARKER, M.D.

organization of the present one was broached, but it had fallen by the wayside. The founding of a new one was discussed at a meeting of the society at the Astor House, then considered the last word in hotel splendor, but the actual founding took place at a fashionable restaurant known as Peletiers, at Broadway and Prince Street, and not far from Niblo's Garden. Eventually the infant Academy was cradled at the Lyceum of Natural History and from there it passed through various cycles on its way from site to site on the island of Manhattan.

From the first it became an advocate of public well being. It started agitations which gave New York City better sewers; founded a Board of Health; insisted on establishing sanitary police; built up the Quarantine service; demanded a pure milk supply and got itself violently disliked by certain interests for insisting that cattle fed on distillery mash were not good producers of baby food. Its successful crusade caused the policing of the Croton Watershed, and constant analyses of the reservoir contents. Committees from the Academy campaigned against high infant mortality and due largely to its efforts, the American Medical Association established a special section to advance the treatment of the diseases of children. It thundered against quackery; drafted a code of medical ethics and so obtained the passage of license laws distinguished between regular and irregular practitioners. Its movement for the more complete isolation of cases of contagious diseases, culminated in the founding of the Willard Parker Hospital. It became a pioneer in the then new science of bacteriology, helped introduce antitoxins for diphtheria; advocated Pasteur's methods of inoculating persons bitten by mad dogs, and promoted the use of sera and vaccines. Forceful, plain spoken leaders of those days have long since been gathered to their fathers, but the old Academy continues to function through its committees on education and public health, and in innumerable ways that make for the common weal.

Its first important headquarters for which it raised a considerable fund, were at 12 West Thirty-first Street, where a highstooped house of the Brown Stone Age was remodeled.

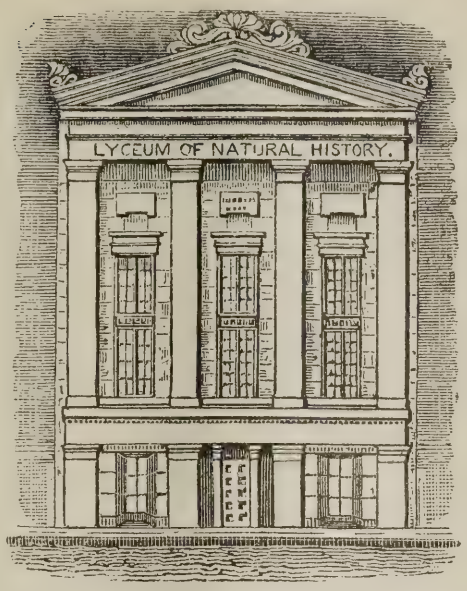
The building at 17 West Forty-third Street, from which the institution will be moving before many months, was opened in 1890, and a splendidly appointed structure it is still, although now totally inadequate for the work done there and for housing the scientific, literary and artistic treasures. It was in this building, in 1897, that the semicentennial was celebrated, the orator of the day being Grover Cleveland, then President of the United States.

Home of the Academy from 1860 to 1875, College of Physicians and Surgeons, Columbia University, Fourth Avenue and Twenty-third Street.

It was proposed, as early as 1909, that a new structure be erected. Some ten building projects and five sites were considered and rejected. In 1922, the Carnegie

Corporation donated $1,550,000 and the Rockefeller Foundation provided an endowment of $1,250,000 for the keeping up of additional educational and library activities to be directed from the new quarters. The sum of $531,384.05 was pledged, of which the members gave about half, and lay friends the balance. What with the three quarters of a million dollars which had been amassed all these years, the Academy is well equipped to enter upon a new phase of its useful service and to utilize additional funds.

The location of the new building at the southeast corner of Fifth Avenue and 103rd Street is within convenient reach of leading hospitals, such as Mt. Sinai, the Fifth Avenue, the Presbyterian and by no means remote from the new medical centre which is to be created at the upper end of Manhattan Island. To the lay sightseer it will be associated with the Metropolitan Museum of Art, the New York Historical Society and various other institutions which loom on the cultural horizon.



First home of the Academy, Lyceum of Natural History, 561 Broadway.

As is the present structure in West Forty-third Street, the new home will be in the Romanesque style in which its architects, the Messrs. York and Sawyer so much excel. The contractors are Marc Eidlitz & Son, Inc., and Mr. Frank Sutton is the consulting engineer. The building will have a frontage of one hundred feet on Fifth Avenue and a length of 175 feet in the side street. The main part will be six stories high, exclusive of the mezzanine which really makes it seven, and the roof will be one hundred feet above the curb. The lower part, or wing, will be fifty feet high. The walls are to be of creamy limestone and red sand stone combined, and will have that varied tapestry texture which is always such a delight to the eyes.

Beginning now from the bed rock, there will be a sub-basement stored with fuel and oil and all manner of gear for heating and lighting and artificial ventilation. There will be receiving and packing rooms for the huge library, wash rooms and all kinds of utilities—accessible by lifts and elevators. The basement is to have a large work room for the mechanical staff, lavatories, storerooms and also a very complete kitchen in which a banquet could be cooked for hundreds of persons.

We come now to the first or ground floor, which will be reached from a wide arched entrance on the side of the building, an arrangement made necessary on account of the pressure of traffic in Fifth Avenue. The entrance will give into a commodious hall or foyer forty-five feet in length and twenty-two in width. Immediately at the right will be a reception room; next to that, a large pantry and last, a combination exhibition and collation room.

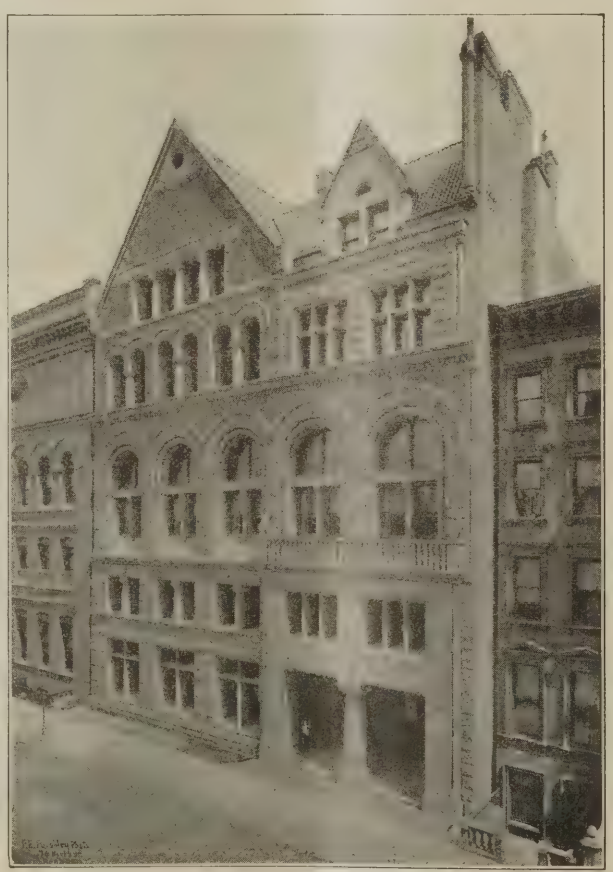
Ever since that memorable night at Peletier's, more than three quarters of a century ago, the New York Academy of Medicine has not neglected the inner man. After every meeting, when it had quarters of its own, a repast was served. Some years ago there was a jovial soul, Dr. Alfred Lee Loomis, by name, who had charge of these refreshment proceedings. He contributed to the expenses himself and designated Mr. John S. Brownne, the librarian, to collect the balance. When the good doctor passed from these scenes, it was found that he had left a bequest of $10,000 as "entertainment fund" with the income of which the Academicians were to refresh themselves. In the Forty-third Street building there is a room, most ornately furnished, paneled, and having a ponderous French overmantel, in which the Loomis collation was served after stated meeting. Of course, no papers of New York physicians can be dry, but if they were, the good cheer furnished by the will of that prince of good fellows, would have proven the effective antidote. Before the pre-Volstead era, in those dear damp days beyond recall, a punch was a prodigious impetus. It glowed in a silver bowl, kegs of cool beer gave their cooling amber rills, and salads and tempting sandwiches and ice cream in alluring forms comforted and stayed the soul. Of course, even before the spectre of the Cost of Living stalked, the fare had to be extended somewhat by other contributions. Somebody always supplied the cigars.

Home of the Academy at New York University, 1850 to 1860

On special occasions, when distinguished visitors from abroad were present, the tradition has it that champagne sparkled and the Astor loving cup was brought from the safe and passed from hand to hand. This glorious example of the goldsmith's art was presented by the first Mrs. John Jacob Astor years ago, through her physician, Dr. Fordyce Barker, who brought so many of the four hundred into this world of joy. Of course, the Loomis collation and all its traditions will be transferred to the new home. With it, too, will go the jolly, fat legged refectory table—on which so many feasts have been spread. From the pantry, connected by dumb waiters with the kitchen below stairs, viands and beverages will be passed to the guests in the collation room, in the large reception room, or to those who may find it convenient to sit or stand in the grand hall.

Home of the Academy from 1875 to 1889, 12 West Thirty-first Street

Many of the choicest treasures of the Academy will be displayed in the cases built into the walls of the exhibition-collation room, or on tables which can be removed quickly when festivities are in order. As a museum in miniature, this apartment with its softened walnut trim, and opening out on the travertine walled hallway, will be a delight to all interested in the arts. Here, indeed, a collector's paradise is in prospect. The medical incunabula are famous. Among the classic works, in perfect preservation, are Albertus Magnus's *De Animalibus* bearing date of 1497; the Expositiones of Ferrarus, 1494; choice volumes of Rhazes, with fifteenth century imprints; and editions of the books of Pliny, the Younger, from the press of the Renaissance. In these cases, too, will be the instruments used by some of the world's greatest surgeons, worth more than their weight in gold by reason of their association with pioneers who devised them to ease human suffering. The collection of Dr. Valentine Mott, distinguished surgeon, and member of the highest social circles of old New York, are in the possession of the Academy. In it is a set of amputating knives which he obtained in England when he was studying with Sir Astley Cooper, the noted court physician. Their handles are made from sturdy oak, taken from old London Bridge.



Present home of the Academy, 17 West Forty-third Street

Still on the first floor, we shall find an informal reception room, coat rooms, retiring rooms and all manner of conveniences.

From the large hall we shall be able to go to the auditorium situated in the two story wing and extending upward into the second story with its balcony. The main room will seat 516 persons, the balconies 171 more, thus making seven hundred persons in all. At the side of the stage of the auditorium will be a small conference room for speakers or for use as a dressing room. Booths of metal for stereopticon and moving pictures, telephone stations and other appliances will be provided.

Of prime importance in the life and work of the Academy is its library of more than 327,000 volumes, exclusive of the periodicals, second in this country only to that of the Surgeon General in Washington. This storehouse of medical lore is not only available for the members of the Academy, but also to physicians from everywhere, and until two o'clock in the afternoon, on week days the rules provide, the general public is admitted. The stacks for the books will begin on the solid rock in the subbasement, and extend up through basement and the three floors.

They will consist of nine tiers each seven feet in height and the total capacity will be enough to take care of the expansion of the library for some years to come. This installation resembles that of the New York Public Library, a startling innovation in its time, which was designed by a physician, the late Dr. John S. Billings, whose deep learning and fine executive ability were of such service to the general public.

The visible part of the library, as far as the non-technical readers are concerned, at least, will be on the third floor in the principal or taller part of the building. From its tall arched windows one may let one's eyes stray

occasionally to the throbbing traffic of Fifth Avenue. The chief reading room will be ninety-five feet by thirty-seven feet and at its six long tables one hundred and sixteen persons can be seated at once. The adjoining journal room will accommodate about sixty more seekers for information. Adjoining the principal reading room will be a members' room. The delivery desk will be on the third floor, just in front of the stack, and on this floor also, over the auditorium, will be the workrooms for the librarians and indexers. The third mezzanine will have the upper parts of the high ceiled and commodious reading and journal rooms, and some small studies. There will be on the open shelves about ten thousand books, works of reference and the more recent bound volumes of medical journals.

Rooms for the meetings of the various sections of the Academy that is, groups of specialists appear on the front part of the second floor and on the fourth and fifth stories. Each of the sections has its large meeting room, attached to which are small apartments, where patients or subjects may be undressed and brought into the meeting room for the examination and observation of those present. Every one of these section quarters will have its screen, its blackboard, and all facilities for showing the x ray plates. There will be also ingenious devices for announcing that some one is "wanted on the telephone."

Several important outside activities will be received into the new fold. As, for example, there will be offices for the New York State and the County Medical Societies on the fourth floor and for the Hospital Information Bureau of the United Hospital Fund on the fifth. The ancient and honorable Society for the Relief of Widows and Orphans and the Physicians' Mutual Aid Association will also be welcomed.

Administration offices will occupy the sixth story. Here will be the office of the newly appointed director, Dr. Linsly R. Williams; the Council Room, and the rooms for clerks and bookkeepers. A special rest room will be arranged for the women workers, with a luncheon kitchen attached. On this floor will be stationed many other agencies through which the Academy extends its mission to all mankind. To this place will be transferred its Committee on Education, which keeps up the standards of the profession. There, too, will be the Clinical Information Bureau, where physicians are informed of operations which they may witness at the various hospitals and thus avail themselves of much valuable material for their own work. It supplements the bulletin boards which will be on the first floor as a guide to the meetings of the Academy and its sections and affiliated societies.

Last, but not by any means least, will be the Public Health Committee of the Academy, which is carrying on the great work of social and preventive medicine; educating the public in hygiene; cooperating with the Board of Health; and doing all in its power to impress upon six millions of New Yorkers the value of radiant, efficient health.

Such will be the new home of the New York Academy of Medicine made possible by philanthropy and dedicated to the highest service of humanity.

220 West Forty-second Street.

An Exhibit at the New York Academy of Medicine of the Works of Sir Thomas Browne

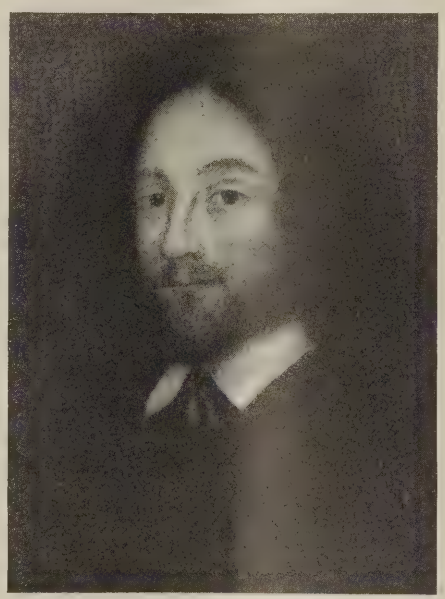
"For the student of medicine, the writings of Sir Thomas Browne have a very positive value," writes Sir William Osler in his biographical sketch of the great English philosopher and physician included in that fascinating volume, *An Alabama Student*. "The charm of high thoughts clad in beautiful language may win some readers to a love of good literature; but beyond this is a still greater advantage. Like the *Thoughts* of Marcus Aurelius and the *Enchiridion* of Epictetus, the *Religio* is full of counsels of perfection which appeal to the mind of youth, still plastic and unhardened by contact with the world. Carefully studied, from such books come subtle influences which give stability to character and help to give a man a sane outlook on the complex problems of life. Sealed early of this tribe of authors, a student takes with him, as *compagnons de voyage,* lifelong friends whose thoughts become his thoughts and whose ways become his ways. Mastery of self, conscientious devotion to duty, deep human interest in human beings—these best of all lessons you must learn now or never; and these are some of the lessons which may be gleaned from the life and from the writings of Sir Thomas Browne."

Sir Thomas Browne was born in London on October 19, 1603, in celebration of which an anniversary exhibit of his works is being shown at the New York Academy of Medicine. He could lift up one hand to Heaven, he says, that he was born of honest parents, that modesty, humility, patience, and veracity lay in the same egg, and came into the world with him. We have very little accurate information about his early years. His father was a London merchant, whose portraits show him to have had a fine presence. His mother was married a second time to Sir Thomas Dutton, a man of wealth and position, who gave his stepson all the advantages of education and travel in his youth. The young Thomas attended school at Winchester and went to Pembroke College, Oxford. It is not known how he happened to take up the study of medicine. He visited Ireland and spent two years traveling and studying on the Continent. Sir William Osler is of the opinion that he must have made good use of his opportunities, since he was able to boast, very modestly, that he was conversant with six languages.

He returned to England in 1634 and settled at Shibden Dale, near Halifax, and it was here that the *Religio Medici* was written. He makes it clear to us that the book was written while he was still very

young. In 1637 he went to Norwich to live, and there spent forty-five years as a student practitioner, with his chief interests centred in his family, his friends, his studies and his patients. In 1641 he married Dorothy Mileham, "a lady of such symmetrical proportions to her worthy husband that they seemed to come together by a kind of natural magnetism." There were ten children. Edward, the oldest of the boys, followed his father's profession and was made president of the Royal College of Physicians. Edward's son, "Tommy," also became a physician and practised with his father.

Sir Thomas was a staunch Royalist. He refers to the execution of Charles I as "a horrid murther" and he considered Cromwell a usurper. In his writings he was discreetly silent on the subject of the Civil War. His rule of life he expressed in a bit of advice to his son: "Times look troublesome, but you have an honest and peaceable profession which may employ you, and discretion to guide your words and actions." He was quite in accord with modern psychological theories in his opinions on education, for he urged his children to form early habits of independence, and sent them abroad young. His son, Thomas, was sent to France alone at the age of fourteen. He tells of his boys to "cast off *pudor rusticus* and to have a handsome garb of his body." The girls also were sent to France.



SIR THOMAS BROWNE

In 1671 he was knighted by Charles II, and in 1664 made honorary fellow of the Royal College of Physicians. His correspondence shows that he numbered among his friends and acquaintances many of the leading men of his day. He was most generous to his family and friends, and contributed largely to educational and other public causes. Sir William Osler says of him: "A life placid, uneventful, and easy, without stress or strain, happy in his friends, his family, and his work, he expressed in it that harmony of the inner and of the outer man which it is the aim of all true philosophy to attain, and which he inculcated so nobly and in such noble words in the *Religio Medici* and in the *Christian Morals.*" His friend, Sir John Whitefoot, wrote of him: "He was never seen to be transported with mirth or dejected with sadness; always cheerful but rarely merry, at any sensible rate; seldom heard to break a jest, and when he did he would be apt to blush at the levity of it. His gravity was natural, without affectation."

He died suddenly on his seventy-seventh birthday from an attack of colic. It had always been one of his pet theories that it was best and most fitting for a man to end his days on the anniversary of the day when his life began, and so it was with him.

In celebration of this, three hundred and twentieth, anniversary of his birth, the New York Academy of Medicine has arranged its interesting exhibit of some of his works and other material of interest concerning the man and his life, which opened on October 19th. A number of the finest of the editions shown are the property of the Academy itself, others were loaned from the medical collection of Dr. Eli Moschcowitz, of New York City, and from other local collections. The material is on exhibition in the reception room of the Academy.

Among copies of the works shown belonging to the Academy of Medicine is a rare Dutch one, *Alle de Werken van Thomas Browne,* printed in Amsterdam in 1688. The volume is characterized by the beautiful and graceful typography, and handsome paper and binding typical of that period of the art of printing. There is a Dutch edition, even earlier—1668—of the *Pseudodoxia Epidemica,* also published in Amsterdam. A German edition of the same work printed in 1680 and very handsomely gotten up is also shown. Among fine modern editions is that of the *Religio Medici* published in New York by the Scott-Thaw Company in 1903. One of the most valuable of the late works relating to Sir Thomas Browne is the beautifully gotten up bibliography of his writings compiled and edited by Dr. Geoffrey Keynes and published by the Cambridge University Press in 1924. The volume is dedicated to Sir William Osler and is unusually artistic in form. Probably no British physician has ever had the following among litterateurs and intelligent laymen that belongs to Browne, as is shown by the large number of popular editions of his works still on the market. Among these are the *Everyman* edition and others almost as well known. He is the only physician included in Edmund Gosse's *English Men of Letters Series.* A number of reprints of his works have been issued as late as 1924.

A large number of the older editions shown in the exhibit are the property of Dr. Moschcowitz. Some of these are very valuable in that they still bear their original bindings; others have been rebound. Among these are some of the earliest editions of the *Religio,* which are supposed to have been published without the author's permission. An interesting feature of Dr. Moschcowitz's collection is a manuscript letter of Sir Thomas Browne's which had never been published until Dr. Moschcowitz's account of it, with facsimile reproductions, appeared in *Annals of Medical History* for September, 1923. The text of the letter was probably written by Browne's secretary or amanuensis, but marginal notes, the signature, and an extra portion of manuscript pasted at the side of the last page are in the great man's own handwriting. The original manuscript of this is shown at the Academy of Medicine.

Among the portraits on exhibition are some from the beautiful collection recently presented to the Academy by Dr. Charles Loomis Dana. Others are

from a collection published in a recent issue of *Biometrika*. These include a family chart and reproductions from photographs of Sir Thomas Browne's skull, which was found by workmen who opened his coffin in the church of St. Peter Mancrott by mistake. The skull was turned over to Dr. Edward Lubbock who presented it to the museum in the Norfolk and Norwich Infirmary, where it is on exhibition bearing a printed slip with the following quotation from the *Hydriotaphia:* "To be knaved out of our graves, to have our skulls made drinking bowls, and our bones turned into pipes, to delight and sport our enemies, are tragical abominations escaped in burning burials."

This makes us think also of Sir Thomas Browne's well known sentence, "Who knows the fate of his bones, or how often he is to be buried?" and of similar sentiments expressed in his beautiful Urn Burial, and Letter to a Friend upon Occasion of the Death of His Intimate Friend, which Walter Pater characterizes as "the best justification of Browne's literary reputation." The Letter to a Friend has recently been reprinted as Number One of the beautiful *Haslewood Reprints*. One of these is shown with the Academy's collection.

Sir Kenelm Digby was Browne's first critic. He not only read the *Religio* through on one night in bed, but on the same night wrote his Observations upon it in the form of a letter to his friend, which extends to three fourths of the side of the *Religio* itself.

These were published in the fifth edition of the *Religio,* dated 1659. Among others of Browne's critics were Samuel Johnson, whose alleged first publication was the *Christian Morals;* Lamb, Coleridge, Pater, and Gosse in his own country; and in America, Ticknor, Fields, Holmes and Lowell. But none has shown keener appreciation than the French critic, Taine, who wrote:

"Let us conceive a kindred spirit to Shakespeare's, a scholar and an observer instead of an actor and a poet, who in place of creating is occupied in comprehending, but who, like Shakespeare, applies himself to living things, penetrates their internal structure, puts himself in communication with their laws, imprints in himself fervently and scrupulously the smallest details of their figure; who at the same time extends his penetrating surmises beyond the region of observation, discerns behind visible phenomena a world obscure yet sublime, and trembles with a kind of veneration before the vast, indistinct, but populous abyss on whose surface our little universe hangs quivering.

"Such a one is Sir Thomas Browne—a naturalist, a philosopher, a scholar, a physician, and a moralist, almost the last of the generation which produced Jeremy Taylor and Shakespeare. No thinker bears stronger witness to the wandering and inventive curiosity of the age. No writer has better displayed the brilliant and sombre imagination of the North. No one has spoken with a more elegant emotion of death, the vast night of forgetfulness, of the all devouring pit of human vanity which tries to create an immortality out of ephemeral glory or sculptured stones. No one has revealed in more glowing and original expressions the poetic sap which flows through all the minds of the age."

News Items.

Staten Island Hospital.—The cornerstone of the new $500,000 addition to the Staten Island Hospital was laid October 17th.

Study of Otosclerosis.—The Carnegie Corporation of New York has granted $90,000 to the American Otological Society for a study of otosclerosis to be conducted during the next five years.

Medical Centre.—It is announced that Sloane Hospital for Women and the Vanderbilt Clinic, New York, will become members of the new medical centre.

Malaria Study.—A study of malaria is to be carried on for several months by the Public Health Service, in Polk, Hillsborough, and Citrus Counties, Florida.

Anniversary Lecture at New York Academy.—The Anniversary Discourse of the New York Academy of Medicine will be delivered November 19th, by Dr. George E. Vincent. His subject will be The Doctor and the Changing Order.

Gift to University of Pennsylvania.—There have recently been placed in Houston Hall the sword of Dr. John Houston, surgeon during the Revolution, and his diploma from Glasgow University. Doctor Houston was a graduate from Pennsylvania in 1769.

New Health Centre.—A gift of $75,000 from Mrs. Leopold Wineman will be used for the Wineman Memorial Health Centre of Detroit, taking the place of the North End Clinic of the Jewish Charities.

Course in Physiotherapy.—A six weeks' clinical course in physiotherapy to be given to graduate students by Columbia, at the Beekman Street Hospital, is planned beginning November 9th. Information may be obtained from the dean of the School of Medicine of Columbia.

Harvey Society Lecture.—Dr. John Northrup, of the Rockefeller Institute for Medical Research, will deliver the second Harvey Society Lecture at the New York Academy of Medicine on Saturday evening, November 14, 1925, at eight-thirty. His subject will be Pepsin and Trypsin.

Graduate Clinics in Chicago.—The Norwegian-American Hospital has arranged a series of graduate clinics for the winter months, covering regional anatomy, physical diagnosis, internal medicine, and urology, and also case presentations and pathologic conferences. Dr. Harry Noskin is in charge of the programs.

Examination for Psychologist.—A position is open in the U. S. Public Health Service, Atlanta, as associate psychologist at Atlanta, Georgia, for the study of the mental status of negro school children. The entrance salary is three thousand dollars; a medical degree is not required. Information may be obtained from the U. S. Civil Service Commission.

Gifts to Jefferson Hospital.—The will of the late Simon Gratz of Philadelphia provides several gifts for Jefferson Hospital, $50,000 for a private room for the care of school teachers, free of charge; $7,000 to be awarded to a graduate doing within five years the most important work in the advance of medical or surgical treatment of disease, or research; $20,000 for the endowment of four beds in memory of members of his family.

Lane Lectures.—The Lane Lectures of the Stanford University Medical School, San Francisco, will be given November 9th to 13th, by Dr. Vittorio Putti, professor of orthopedic surgery of the University of Bologna and director of the Rizzoli Institute. His subjects will be, Congenital Dislocation of the Hip; Arthroplasty, History and General Considerations; Technic of Arthroplasty; Pathogenesis of Sciatic Pain; and The University of Bologna in the History of Medicine.

Child Mortality Rate.—A study has been made by the U. S. Children's Bureau of the effect of a law passed in 1916, in Maryland, prohibiting separation of mother and baby in the first six months of the child's life. Before the law, one of every three babies of unmarried mothers died the first year; one out of four, in the first six months. The death rate now is one of eight babies of unmarried mothers during the first year and one of twelve during the first six months; a reduction of more than fifty per cent. The death rate of legitimate infants was reduced about twenty per cent. during the same period.

National Medical Congress.—The Philadelphia County Medical Society is planning to issue invitations for a national medical congress, to be held next year in connection with the sesquicentennial celebration taking place in the city next year.

Sternberg Medal.—As a memorial to the late George M. Sternberg, a former surgeon general of the United States army, Mrs. Sternberg has donated a medal to be awarded yearly to the student at the University of Michigan Medical School who makes the best record in preventive medicine.

Chicago Surgical Society.—This organization celebrated its twenty-fifth anniversary with a dinner at the Hotel Sherman, October 2d. The speakers were charter members of the society. A testimonial address to the late Dr. Albert J. Ochsner was delivered by Dr. Edward Wyllys Andrews.

Pediatric Societies Meet.—The New England Pediatric Society, the Pediatric Section of the New York Academy of Medicine, and the Philadelphia Pediatric Society held a joint meeting in Philadelphia, October tenth. A symposium was held on Posttonsillectomic Pulmonary Abscess, as part of the meeting .

Smallpox Survey in Kentucky.—A study recently made by the state board of health showed there had been 1,700 cases of smallpox during the fiscal year ending June 30, 1925; 150 of these were severe and eight fatal. About thirty per cent. of the school children of the state had been successfully vacinnated. The board of health declared an emergency to exist and called for an enforcement of the state laws requiring vaccination as a requisite for school attendance.

Cincinnati Hospital Survey.—A study recently completed by the Helen S. Trounstine Foundation of Cincinnati, at request of the community chest, showed eighteen private hospitals with 2,110 beds; three municipal hospitals with 1,140 beds; and twelve proprietary hospitals with 355 beds. Among the recommendations of the survey are better facilities for convalescent care and for treatment of chronic patients; and also the formation of a hospital council representing the hospitals, the academy of medicine, and the public.

Italy Honors American Stomatologists.—At the official reception, given at the Department of Health in Rome to the American Stomatological Committee, a parchment of the Seventeenth Century was presented to the American Stomatological Association, as a token of honor to the American pioneers in recognition of their assistance to the Italians, in their fight for the revocation of the 1923 Dental Law. This parchment and a report of the Committee's activities were presented at the meeting of the American Stomatological Association, on October 15, 1925.

Personal.—Dr. Wilfred M. Post of Williston, Long Island, has been awarded the Near East Relief medal for distinguished service, for his work during the typhus epidemic at Constantinople in 1922 and during the Smyrna disaster.

Dr. Nathan Ratnoff will be guest of honor at a testimonial dinner to be held at the Hotel Roosevelt, November 24th. Tickets may be obtained from Dr. Joseph Bieber.

Dr. Simon Flexner, Dr. George E. Vincent and Dr. H. S. Pritchett, of New York, attended the semi-centennial celebration of Vanderbilt University, Nashville.

Dr. Alton S. Pope has been appointed assistant professor of epidemiology at the Institute of Public Health of Columbia, and Dr. Frank G. Pedley, assistant professor of industrial hygiene.

Dr. Grace S. Weightman, of Chicago, has been appointed chief of the division of child hygiene and public nursing of the Illinois Department of Health.

Mr. John S. Brownne, for forty-four years librarian of the New York Academy of Medicine, has retired, becoming consultant librarian. He was presented with a purse from the members of the academy, and an engrossed resolution.

Dr. John J. Lambert, for thirty years on the faculty of the University of Iowa College of Medicine, has resigned to become associated in practice with his brother, Dr. Charles I. Lambert, of New York.

Dr. Hallowell Davis, of Boston, has been appointed by Harvard to aid and advise premedical students in planning and correlating their work in preparation for medical studies.

Dr. Samuel B. Grubbs, of the U. S. Public Health Service, has been detailed assistant surgeon general in charge of foreign and domestic quarantine and immigration.

Society News and Notes.

The Southern Medical Association meets at Dallas, Texas, from November 9th to 12th.

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England has a Medical Golfing Society which holds annual tournaments and affords other social and recreational opportunities to its members. In the tournament held last summer nearly a hundred members participated.

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The American Association for Medical Progress, in commemoration of the anniversary of the death of Pasteur on September 28th, distributed to principals and heads of biology departments of high schools a leaflet entitled, How Pasteur Convinced the World. With this the Association sent out a memorandum of Pasteur's outstanding achievements, with suggestions about suitable programs celebrating Pasteur's work for pupils to take part in without devoting too much time to preparation. A large number of schools responded and gave special programs to commemorate the anniversary.

* * *

Dr. Pierre Janet of France was guest of honor at an afternoon tea at the New York Academy of Medicine on Friday, October 23rd, given by the Neurological Section of the Academy and the New York Neurological Society. The reception committee consisted of Drs. Charles Loomis Dana, Foster Kennedy, Bernard Sachs, L. Pierce Clark, M. Allen Starr, Frederick Peterson, Frederick Tilney, I. Abrahamson, and Charles A. McKendree.

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The first International Congress on Malaria was held at Rome, October 4th-6th.

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The *Medical Press and Circular* makes the announcement that Lord Dawson of Penn, physician to H. M. the King, has left London for Canada and the United States in order to visit some of the hospitals and medical schools in America. Lord Dawson will be guest of honor of leading American societies and institutions.

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The Report of the New York Association for Improving the Condition of the Poor for the year 1924 deals with 5,693 families composed of more than ten thousand adults and nearly twenty thousand children. The report shows noteworthy gains in clinic care, nutrition instruction, hospital care, and mental examinations, and a decided drop in maternity cases, convalescent care, and physical treatment given by nurses.

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Guests of honor from foreign countries at the recent annual meeting of the Association of Military Surgeons of the United States in New York City were Surgeon Rear Admiral Sutton, C.M.G., of the British Navy; Medical Inspector General J. F. A. Rouget of France, Lieutenant Colonel Dolidan Hulewicz of the Polish General Staff, Dr. Dolybe Coryllos of the Greek Army, now a member of the Polyclinic staff; Colonel Speare, Medical Principal of the French War College; Captain Wao Nagimo and Surgeon Marchimo of Japan; Major Guiseppe Rolando of the Italian Navy; and Drs. José Izquierdo, Surgeon General of Venezuela, Bernardo Schiffrin, L. H. Debayle and Henry Debayle, all from Latin America.

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The National Council of the Young Men's Christian Association held its twenty-first national conference on colored work in Washington, D. C., from October 21st to 23rd. The conference brought together the secretaries and laymen of the colored and white races for discussion and future programs. This was the first conference since that held in Cincinnati four years ago.

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Notable European physicians who recently arrived in this country from abroad are Drs. Martel of France, Eugen Hessler, and Sofie Nordhoff-Jung, all members of prominent Continental medical organizations. Well known medical men who visited New York City recently are Dr. P. Ikeda of the S.S. Havre Maru, Osaka S.S. Company; Sir Donald McGavin, Surgeon, New Zealand Navy; and Dr. W. W. Battey of Augusta, Ga. Dr. Gonzales Pedroso of

Havana, Cuba, a prominent genitourinary surgeon, is to be in New York City during November.

* * *

At the meeting of the New York Academy on October 15th, the Wesley M. Carpenter Lecture was delivered by Dr. Lewellys F. Barker, his subject being The Practical Management of Neurotic Patients. At the meeting of the Section of Genitourinary Surgery of the Academy held on October 21st, Dr. Charles P. Mathe of San Francisco addressed the meeting on The Present Day Status of Urology in Europe. At the meeting of the Section of Obstetrics and Gynecology on October 27th the papers of the evening were read by Drs. Samuel Monash and Ira Wilens; Dr. Joseph W. Draper reported an interesting case of actinomycosis of the tubes and ovaries. At the meeting of the Section of Laryngology and Rhinology on October 28th, cases were presented by Drs. J. D. Whitham, A. Lobell, Frank R. Herriman, Leon T. LeWald, Gouverneur Morris Phelps, and Alfred Schattner.

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A summary of the proceedings of the meeting of the permanent committee of the *Office Internationale d'Hygiène Publique,* held in Paris from April 27th-May 6th, is published in Public Health Reports for September 18th. In attendance were delegates from Australia, Belgium, British India, Czechoslovakia, Denmark, Egypt, France, French West Africa, French Indo China, Great Britain, Italy, Japan, Madagascar, Monaco, Morocco, Holland, Norway, Persia, Peru, Poland, Switzerland and South Africa.

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At the luncheon given last summer by the English-Speaking Union at the Hyde Park Hotel, London, in honor of the American and Canadian physicians touring the British Isles, Sir Arbuthnot Lane made an interesting address in which he emphasized the fact that medical men have much more freedom of expression on medical matters in this country than in England. In almost every American newspaper, he said, one might see medical questions freely and boldly discussed by doctors, but if a doctor were to do that in England he would have the Ethical Medical Committee of the British Medical Association down upon him at once. "It was a perfectly absurd position. The medical profession was at fault in putting up with it. Doctors should stand up against it."

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The fourteenth annual congress of the National Safety Council was held in Cleveland, Ohio, from September 28th until October 2nd. The program consisted largely of a résumé of all the important activities of the Council in the safety field during the year. Special emphasis was laid upon the thorough work done along the line of systematized statistics and coordination of the problems common to organizations working with public safety and industrial hygiene. A joint session was held with the industrial nursing section of the National Organization for Public Health Nursing.

* * *

The Child Study Association of America held a conference at the Waldorf Astoria in New York City, October 26th to 28th, and is holding a ten day institute until November 7th. Among speakers listed are Dr. Bernard Glueck, Dr. Helen T. Woolley, Dean J. E. Russell, Dr. Beatrice Hinkle and other authorities on child problems. Among the subjects discussed are child adjustment, parenthood, child training, mental hygiene, delinquency, etc.

* * *

The Fifth International Congress of the History of Medicine was held at Geneva from July 20th to 24th, Dr. Charles Greene Cumston, lecturer at the University of Geneva, presiding. The attendance included representatives from most of the countries of Europe except Germany, Austria and Russia, and also a number of physicians from the United States. Dr. Cumston's presidential address was on the subject of some of Geneva's most distinguished physicians, particularly Daniel Le Clerc, whom he characterized as the father of the history of medicine. Dr. J. D. Rolleston read a paper on Voltaire and some of the English physicians, Dr. Comrie spoke on Robert Blythe, to whom was attributed the first clear description of tuberculous meningitis, and Dr. Ernest Wickers Linner discussed the subject of syphilis in Geneva during the latter part of the fifteenth century. Dr. R. O. Moon read a paper on Paracelsus, and Mrs. Lilian Lindsay one on the growth of the science of dentistry in Great Britain from its beginning until the nineteenth century. Among the entertainments provided for those attending the congress were a tour of Lake Geneva, including visits to the Castle of Chillon and Evrais, which was followed by a banquet in the evening terminating the congress. The next congress, it was announced, will be held in 1927 at Leyden, the former home of Boerhaäve and at one time the most famous medical teaching center in Europe.

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The program of the meeting of the American Public Health Association, held at St. Louis, October 19th to 22nd, emphasized in its general sessions a survey of the year's activities in public health work, and an appraisal of the progress made. Among problems of this kind brought up were functions of administration, costs, professional relationships, standard practice, etc. Dr. A. W. Freeman discussed the subject of costs, Dr. Henry Field Smyth that of progress in industrial hygiene, Dr. W. F. Walker read a paper on advances made in sanitary practice, and Dr. C. J. Hastings one on the future of humanity from a public health point of view. Perhaps the most interesting feature of this meeting was the opportune arrangement of joint sessions for related groups which could thus discuss their common problems. Among these joint sessions was that of industrial hygiene and public health, including discussion of interstate control of poison hazards other than those of food products; and that of sanitary engineering, including air pollution, lighting, and the dangers of carbon monoxide. Another joint session was that of nursing, public health and administration, and a third on epidemiology, including adminstration, sanitary engineering, and vital statistics, with particular attention to the problems of influenza, respiratory disease control, measles, scarlet fever, diphtheria and other epidemic diseases. The forum session was of special interest, since it gave prominence to the subject of free service and statistical evidence of successful health effort.

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The cornerstone of the new building for the New York Academy of Medicine on the corner of Fifth Avenue and 103rd Street was laid at four thirty o'clock on the afternoon of Friday, October 30th. A large number of members and their guests attended the ceremony.

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The Association of Military Surgeons (international), which met in New York City, October 8th-10th, included representatives from many foreign countries, including Japan, Italy, France, Poland, and Great Britain. On the Sunday following the close of the meeting, the delegates and their friends enjoyed an excursion up the Hudson to West Point, where they were the guests of the Military Academy.

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Well known physicians who will visit this country in the near future are Doctor Putti of Bologna, an associate member of the New York Academy of Medicine, and Sir Arbuthnot Lane, who will address the College of Surgeons of Philadelphia.

* * *

In September of 1924 Dr. E. Sergent, of the Faculty of Medicine of Paris and member of the Academy of Medicine, came to Canada as head of a French delegation, including among other distinguished French physicians, Drs. Ribadeau-Dumas, Desmarest, Jeanneny, Joltrain, Francis Bordet and Lescaret. Dr. Sergent had been invited by the government of the Province of Quebec to give a course on tuberculosis at Laval University in Quebec and to the Faculty of Medicine of Montreal. Dr. Ribadeau-Dumas was invited to give at the same time a course in child training. Their trip coincided happily with the time of meeting of the Eighth Congress of Physicians of the French Language of North America, thus enabling them to bring contributions of interest to the Congress. Their courses have been commented upon as most successful, and the cordial welcome of the French-Canadian doctors was pronounced, both in Quebec and Montreal. Among those attending the Congress were many physicians from MacGill University, and a large number from neighboring cities, including Acadia and New Brunswick. Banquets and receptions both public and private testified to the esteem and sympathy felt toward the French by their French-Canadian cousins. The Congress was a great success, and was attended by nearly five hundred.

Book Reviews

EDEMA

L'Œdème. Etude Expérimentale et Clinique. Par J. Le Calvé. Paris: Masson et Cie, 1925. Pp. 648.

In this voluminous monograph the author attempts to establish the thesis that in the genesis of all edemas and serous effusions a vasomotor reaction is the primary cause, and that without such a reaction edema does not occur. He conceives of edema as a defensive reaction of the organism to an excess of water and soluble substance which the body cannot dispose of. In support of his theory the author cites many experiments on rabbits, as well as blood analyses on patients made before and after aspiration of effusions in the pleura or peritoneum. He attempts to bolster his theory with many clinical observations of equivocal value. The first part of the book consisting of 195 pages is devoted to the presentation of this point of view. A careful study of this section leaves the reader unconvinced of the validity of Dr. Calvé's hypothesis. One gains the impression that the author attempts to force facts to fit theory. Indeed a number of his generalizations are without adequate foundation, for instance, that polyuria lowers hypertension when the blood mass is increased. A number of statements and expressions of opinion, however, should prove stimulating to the thoughtful reader.

In the second part of the volume the author attempts a complete clinical study (pathology, pathogeny, symptomatology and treatment) of every form of edema. Here, too, although the purely descriptive sections are quite adequate, the author attempts to explain every type of edema by his theory. Thus he says that cardiac edema is primarily determined by toxins generated in the tissues as a result of anoxemia, which toxins act on the vasomotor apparatus. For a book that attempts a comprehensive review of the subject of edema, the bibliography is very scanty and onesided. There is little mention of literature that is not French.

ARTERIOSCLEROSIS

Arteriosclerosis. A Summary View. By the Late Rt. Hon. Sir T. Clifford Allbutt, M.D. London: Macmillan, Ltd., 1925. Pp. 108.

Sir Clifford Allbutt died on February 22, 1925, in his eighty-ninth year. This booklet was completed a few weeks before his death and is remarkable chiefly as evidence of his undiminished intellectual powers, and indefatigable labors even at this advanced age. He must have been a constant reader of medical periodicals to the very end, for in this work the literature of the last few years is thoroughly covered; indeed the last paper referred to was published in January, 1925. This small treatise is based on a lecture to a Postgraduate class in Cambridge and although entitled "Arteriosclerosis" concerns itself more particularly with essential hypertension or "hyperpiesia," as Allbutt called it. Allbutt was one of the first and the leading English writer to distinguish the group of patients characterized by hypertension unassociated with kidney disease and to insist on differentiating their disorder from the socalled nephritic hypertension. In this volume he again summarizes the evidence supporting this view, which he developed extensively in his two volume work published in 1915. He emphasizes the lack of relationship between arteriosclerosis of the larger arteries (which he has termed "decrescent arteriosclerosis") and hypertension. As a therapeutic measure he has found diathermy the most valuable immediate aid in hyperpiesia. As a summary of the fundamental clinical facts about arteriosclerosis and hypertension by an old and distinguished clinician, this volume should find a large sphere of usefulness.

STOMATOLOGY

Maladies de la Bouche. Par le Dr. R. Nogue. Traite de Stomatologie. Illustre. Paris: J.-B. Bailliere et Fils, 1924.

This book is the seventh volume of the classical system of stomatology by Gaillard and Nogue. It is a complete and scholarly work of almost five hundred pages, illustrated with sixty-five figures. The volume is divided into five large sections as follows: General considerations, semeiology of the mouth, diseases of the lips, diseases of the buccal cavity, diseases of the tongue. Its greatest lack, particularly to the foreign reader, is the absence of an index. This negative feature the book shares with other French publications. It is hoped that future editions will remedy this defect.

The work should make a strong appeal to both physician and dentist.

SURGICAL DYSPEPSIA

A Textbook of the Surgical Dyspepsias. By A. J. Walton, M.B., B.Sc., F.R.C.S. Illustrated. London: Edward Arnold & Co.; New York: Longmans, Green and Company, 1923. Pp. 728.

The splendidly illustrated volume is a welcome contribution to the subject. The author gives every evidence of deep study, thorough familiarity with his field and careful judgment. The presentation is excellent and easy to follow. The bibliography is unusually complete in references to the medical as well as the purely surgical literature.

The subjects treated include surgical anatomy of the various digestive organs, methods of examination, gastric ulcer, duodenal ulcer, pyloric stenosis, gastric neoplasms, diseases of the liver, gallbladder and pancreas, appendix dyspepsia, and visceroptosis in both its medical and surgical aspects.

The book can be heartily recommended for careful perusal by the medical as well as by the surgical student in this field.

CLINICAL DERMATOLOGY

Cliniques Dermatologiques. P*rofessées Dans Les Hôpitaux de Paris (La Rochefoucauld Broca-Pascal-Saint-Louis) et a la Faculté de Medicine de Strasbourg.* Par Dr. L Brocq. Paris: Masson et Cie, 1924. Pp. 739.

All who are interested in dermatology recognize the high position held by Brocq as a teacher and author. He is perhaps best known to the average physician as the author of rather voluminous didactic works on dermatology. The numerous publications which have appeared for many years in the *Annales de Dermatologie et de Syphilographie* and the *Presse Médicale* are by no means so well known. The present volume is practically a collection of such scattered publications and is in no sense a textbook. It

is essentially a clinical treatise founded on the author's long and varied hospital experience. Some of the chapters are reprints of published articles. Some others appear in print for the first time. At the end of the book is found a classified list of the author's writings which form the basis of this volume.

The various chapters are divided into general considerations, parasitic and microbic diseases, the causes of which are apparently known, and cutaneous reactions, an expression applied to that still numerous class of skin diseases in which the causation has not been definitely established. As a philosophical treatise on the etiology of the more important skin diseases, their diagnosis and treatment, the book will be found of value to the more advanced student of dermatology. It is not a useful book for the casual reader or undergraduate student. The text is illustrated by fifty-four black and white photographs, the majority of which are excellent.

BLOOD CHEMISTRY

The Chemistry of the Blood in Clinical Medicine. By O. L. V. De Wesselow, M.B., F.R.C.P. New York: William Wood & Company, 1925. Pp. 255.

Chemical analysis of the blood as an integral part of the routine clinical examination of patients only became possible with the development of the socalled micromethods. Credit for the development of such methods belongs largely to American workers. One result of this achievement of American medicine has been the uncritical worship of blood chemistry estimations by American practitioners. All too often the physician, lacking knowledge of the significance of the changes in the chemical constituents of the blood, leans on the laboratory with the whole weight of his uncritical optimism and expects it to solve for him all matters of diagnosis, treatment and prognosis. In this excellent volume Dr. De Wesselow reviews clearly and accurately the chemistry of the blood in clinical medicine. One after another all of the important chemical constituents of the blood are discussed. A presentation of the important facts of the normal metabolism is followed by a discussion of the significant changes that occur in disease. Chapters are devoted to acidosis and alkalosis, blood sugar, nephritis, tetany, rickets, gout, fats and anoxemia. In a final chapter the important analytical methods are described. A short, well chosen bibliography appears at the end of every chapter. The book should find a wide field of usefulness.

PRINCIPLES OF OPHTHALMOLOGY

Causeries d'Opthalmologie. Documents pour les Praticiens. Par A. Cantonnet. Paris: A. Màloine, 1925. Pp. 325.

A sort of a popular exposition of elementary principles of ophthalmology made up of the author's lectures before his students, and of various medical articles, systematized and collated so as to make interesting reading for the general practitioner. Considerable ground is covered, and the matter is brought up to date, so that even the specialist may profit by going over certain chapters, such as red free illumination, examination of the eyes of aviators, etc. The whole is written in the clear, precise and easily readable French style, that recommends itself even to such English readers who do not have a perfect control over their French.

NUTRITION

The Newer Knowledge of Nutrition. The Use of Foods for the Preservation of Vitality and Health. By E. V. McCollum, Ph.D., Sc.D., and Nina Simmons, Sc.D. Illustrated. Third Edition. Entirely Rewritten. New York: The MacMillan Company, 1925. Pp. 675.

The present is the third edition since this important work first made its appearance in 1918. An entirely new principle—that of the biological, as contrasted with the old chemical, method of food analysis, makes this treatise one of vital interest to the clinician. From such a foundation alone can grow a really adequate concept of "what to eat and why." A refreshing common sense and broadness of vision characterize the entire presentation, as can be seen from such a passage as the following:

"The tendency of those who have investigated the relation of the diet to disease has been to assume that a diet which does not lead to clinically recognizable symptoms of malnutrition is an adequate one. Now that we understand so much about the nutritive needs of the body and about the properties of food-stuffs we appreciate the existence of many grades of malnutrition. It is becoming constantly more evident that even a slight departure from the optimal in the composition of the food may lead to states of nutritional instability which become contributing factors to physical breakdown when hygienic factors are unfavorable, or when infectious processes are operating. Even under the most favorable living conditions, however, there can be little doubt that under such circumstances the body tissues lose their vitality and the span of life tends to shorten."

The present edition contains new matter on rickets, on the effect of diet on resistance to disease, on iodine deficiency and goitre, and on the dietary habits of man in different parts of the world.

The book is strongly recommended to all in any way interested in nutrition, whether in its theoretical or its practical aspects.

IMMUNITY

The Chemical Aspects of Immunity. By H. Gideon Wells, Ph.D., M.D. American Chemical Society Monograph Series. New York: The Chemical Catalog Company, Inc., 1925. Pp. 254.

This is one of a series of monographs published by the American Chemical Society for two purposes. The first purpose, of interest to chemists, is to present the knowledge available upon a chosen topic in a readable form, intelligible to those whose activities extend along a wholly different line, thereby promoting a closer relationship between subjects apparently not closely related. The second purpose is to promote research in the branch of science covered by the monograph, by furnishing a well digested survey of the progress already made in that field, and by pointing out directions in which investigation needs to be extended. Such endeavors constitute a serious attempt to found an American chemical literature without primary regard to commercial considerations.

Originally the reactions of immunity were studied with the purpose of solving urgent problems concerning the cure, diagnosis and prevention of disease. Then came the growing recognition of their importance as general biological phenomena not exclusively concerned with disease. The chemical significance of immunity was not appreciated because of the unknown constitution of bacteria, blood serum, and cells. The nomenclature proposed by Ehrlich was simply a hypothesis. The early recognition by Bordet of the similarity of the reactions of immunity to the reactions of colloid chemistry probably failed

to impress the rank and file of investigators in immunology, because at that time they could not appreciate the significance of the colloidal chemical viewpoint, for lack of knowledge of this new field of chemistry. With the progress of colloidal chemistry and studies on the behavior of protein solutions more light will be thrown on the problems of immunity resulting in increased knowledge of the subject.

The author presents a digest of the entire subject of immunity from the chemical aspect, so arranged as to constitute not only a summary of the situation, but also to serve as an illustrated guide to the literature dealing therewith. The bibliography is adequate and covers practically all contributions of importance.

The introductory chapter deals with immunological reactions as chemical reactions and the definitions of terms used in immunology. The subjects discussed include antigens, immunological specificity, the nature of antibodies, neutralization of toxin by antitoxin, agglutination and precipitation reactions, the lytic reactions (bacteriolysis, cytolysis, amboceptor complement reactions), the Wassermann reaction and related reactions with syphilitic blood, hypersensitiveness, anaphylaxis and allergy, phagocytic immunity, and resistance to nonantigenic poisons.

The author's style is simple and explicit, rendering the discussions intelligible even to the tyro. Each chapter is ended with a recapitulation which also helps to a better understanding of the subject matter. This monograph may well be used as a textbook on the subject of immunity.

MEDICAL STATISTICS

Statistical Methods for Research Workers. Biological Monographs and Manuals, III. By R. A. Fisher, M.A. London and Edinburgh: Oliver and Boyd, 1925. Pp. 239.

Biology used to be purely a matter of observing and describing the characteristics of living organisms. Francis Galton began the quantitative study of biological phenomena by applying to them the methods of mathematical analysis. At the present time a biologist without some knowledge of the fundamental principles of probability distributions and correlation coefficients is very much at sea when he comes to evaluate the reliability of experimental work for the conditions of variation within a group. Unfortunately, the mathematics of the subject is repellent; unfortunately also the physician has in general no mathematical equipment to start with.

However, a beginning has surely been made, for a surgeon has been heard to say in open meeting that he omitted the second and third decimals from his percentages, because Raymond Pearl said that they were not significant. The surgeon of course was not aware that Raymond Pearl was not the first to say this, nor was he aware that even the figures to the left of the decimal point were not significant, owing to the small number of cases which he had studied, but at least some light has penetrated the medical profession, and after the practitioner has learned to abandon decimals in his percentages, he may ultimately come to test the whole numbers. Almost all medical statistics are vitiated by the lack of knowledge of the simple relations of probabilities, and it is a pity that the contents of a book like Fisher's will never in this generation be made a part of the equipment of the average medical investigator.

HANDBOOK FOR NURSES

Eye, Ear, Nose and Throat Manual for Nurses. By Roy H. Parkinson, M.D. Illustrated. St. Louis: The C. V. Mosby Company, 1925. Pp. 207.

A useful little book written for the benefit of nurses connected with special work on eye, ear, nose and throat. The author's aim to give just enough instruction to the nurse to enable her to understand and follow the directions given by the physician, has been fully achieved. The book is divided in two principal parts, the first of which deals with the essentials of the anatomy and physiology of the parts, in short, concise paragraphs, while the rest is devoted to the description of the diseases and their treatment, as far as the nurse may be concerned therein. The concluding chapter on public health in its relation to the work of the school and district nurses, gives in a condensed and easily readable form a great deal of valuable information concerning the handling of eye, ear, nose and throat problems in school children.

LABORATORY MANUAL

Laboratory Diagnostic Methods. Pathological, Bacteriological, Serological and Chemical. By John A. Kolmer and Fred Boerner. New York and London: D. Appleton and Company, 1925. Pp. 338.

This is an extremely well prepared, concise and useful manual for the laboratory worker. Almost every type of laboratory examination required is described, including some which are not frequently found in such volumes, such as tests for liver function by the methods of Piersol and Bockus, and of Rosenthal, and Widal and Abrami's hemoclastic crises tests. The new Kolmer qualitative and quantitative tests for syphilis are very clearly explained. The book is an admirable guide to diagnostic procedures, and will be found helpful in this field. It is conveniently interleaved, well indexed, and altogether fulfills its purpose excellently.

Medicoliterary Notes.

A union list of foreign serials cited in the Psychological Index for 1922, currently received in 114 libraries, has been issued in mimeographed form to subscribing libraries by the Research Information Bureau of the National Research Council, Washington, D. C.

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The Board of Health of North Carolina is publishing a new four page bulletin entitled *Constructive Medicine* for the physicians in the State. The whole field of health promotion is covered, with emphasis on the relating of the special problems of public health workers to those which are at the same time the problems of the doctors.

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In a recent report of the New York Association for Improving the Condition of the Poor, it is stated that approximately seven tons were added to the weight of three thousand children from the slums and tenements, who went to the association's summer camps during the past season. Each child gained an average of four pounds and eleven ounces. The report tells us that 5,200 mothers and children spend 75,430 days in the country and at the sea shore as the association's guests. The outings cost $81,490, which was contributed by 4,828 persons.

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That emotion felt by an audience causes a rise in room temperature has long been believed, but actual records are difficult to find. However, during the memorial exercises for the late President Wilson records were kept and a report made by S. Homer Woodbridge in the *Heating and*

Ventilation Magazine. In the House of Representatives, where the services were held, there is an air supply of 64,000 cubic feet a minute, each six minutes' supply equalling the cubic contents of the hall. The thermometer used was graduated to tenths of degrees, and the temperature was recorded at five minute and finally at two and a half minute intervals. The temperature of the air as it entered the hall averaged 70.5 degrees, the temperature of the escaping air being 72.25 degrees. By the time the assembly of 1500 had settled, the temperature was 72.16. degrees. There was slight variation in the temperature according to the interest and nervous tension of the audience; as the address neared its climax and the tension became greater, the temperature rose suddenly. In five minutes it changed from 72.51 degrees to 75.3 degrees, an increase of 2.79 degrees. The applause, the rising of the audience, and the arrangement of clothing released still more warmth. Immediately following the close of the address and during the music which followed, there was a sharp drop in temperature.—*Nation's Health.*

* * *

A new campaign to eliminate diphtheria in the Bellevue-Yorkville district of New York City is being conducted by the Milbank Memorial Fund in cooperation with the New York City Department of Health. The Metropolitan Life Insurance Company is assisting by the distribution of fifty thousand leaflets on the subject of diphtheria, and all the private physicians in the district have been furnished with antitoxin free of charge. The campaign is in charge of Dr. L. D. Bristol and Bailey B. Burritt, representing the Foundation, and Dr. William H. Park and Dr. John Oberwager of the Department of Health.

* * *

The U. S. Department of the Interior has announced that three new hospitals and an addition to a fourth will be constructed for the American Indians. These will be located at the Klamath reservation in Oregon, at Fort Peck, Montana, at Pyramid Lake, Nevada, and the hospital at Fort Lapwai, Idaho, will be enlarged with a building of fifty beds.

* * *

A late issue of the *Manchester Guardian Weekly* comments humorously and rather gloatingly on the results of the tests recently made in this country anent the affects of cigarette smoking, and mentioned in a late number of the *British Medical Journal.* The conclusion drawn by the experimenter was that cigarettes acted both as a stimulant and as a sedative to the sensory mechanism. When that mechanism was below par, the smoking toned it up; when it was overstrung, it calmed down. "The comment of the *British Medical Journal* is that 'it would appear that tobacco smoking favours the maintenance of, or return to, a normal frame of mind.' This, roughly, is what most smokers hope when they light a cigarette or fill a pipe. But it is nice for them to have their primitive and unguided aspiration confirmed by means of electrical stimuli and sensory thresholds. When the grandmother has been tought to suck eggs, it is at least gratifying to have the success of the old lady's performance adequately established by a well equipped and impartial investigator."

* * *

Boston is to have a *Year Book,* a volume of about five hundred pages, which will present historical data in regard to the development of the city's activities, as well as give descriptions in detail of the work of the various city departments, bureaus and commissions, a review of general social and industrial development, and tables of municipal and community statistics. This will be the first of a series of Boston Year Books.

* * *

The Public Health Laboratory of the University of Amsterdam is to make an exhaustive investigation as to the causes, prevention and cure of one of humanity's worst scourges, the socalled common cold. The work will probably continue until next summer, and will be carried out throughout the whole of Holland by means of the cooperation of eight thousand collaborators.

* * *

The poisonous toadstool has been put in the category of a criminal by the Paris police, according to the New York *World.* A squad of experts has been organized to aid in keeping the deadly fungus, often eaten for the mushroom, out of the kitchen. One group of bluecoats has been stationed in the city markets to pass on all mushrooms sold there, while another group maintains an inspection service station to which the amateur woodsman can take his basket of fungi to get an official O. K. if they are edible.

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Another innovation in France along the lines of public health is the establishment in Paris of a national bureau of public hygiene. Its purposes will be to collect information on the present state of sanitation, hygiene and infectious diseases in the country, so that this information may be made available to students and to the public; to organize in France and in the colonies, educational work for the purpose of teaching measures for the preservation of health; and to coordinate public and private efforts for health protection. The new bureau will be attached to the Ministry of Labor, Hygiene, Charity and Welfare.

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The October issue of *Scribner's Magazine* contains an interesting article on Quackery and Psychology, by Edgar James Swift, whose book entitled *Business Power Through Psychology* has recently been published by Scribner.

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The New York State Board of Regents has granted a charter to the Training School for Jewish Social and Welfare Workers, a national institution which aims to serve the needs of trained social workers throughout the country. The school will be located at 210 West Ninety-first Street, New York City.

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According to a recent report of the Health Section of the League of Nations, syphilis has been reduced in Copenhagen, Denmark, from 8.8 per 10,000 in 1910 to 4.6 in 1922. The rate of infection with gonorrhea also shows a considerable decline.

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The Philadelphia Health Council and Tuberculosis Committee has formulated a program of organized health service with the twofold purpose of giving the workers medical attention, and of demonstrating to employers the need of constant medical supervision in their plants. This service includes free examinations at plants during working hours, and free advice and follow up work in the homes.

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One of England's most valued public health officials, Dr. James Niven, was recently found drowned on a beach on the Isle of Man. Dr. Niven was at the time of his death Medical Health Officer of Manchester. The *Manchester Guardian Weekly* for October 2nd publishes not only an obituary notice but also an editorial commenting upon his work and its value to the whole of England, and closing with the statement that, although "very little was publicly known about him, except by a few colleagues, he was one of the men who keep English municipal work an honorable service, and maintain the dignified tradition that a man should give to the world more than he takes from it."

* * *

Recent publications of interest to the medical profession are: *Mental Disorder and the Criminal Law,* a Study in medicosociological jurisprudence, by Sheldon Glueck (Little, Brown); *The Child, the Clinic and the Court,* a group of papers by Julia Lathrop, William Healy, Miriam Van Waters, Franz Boas, Joel D. Hunter, Ben B. Lindsay, Grace Abbott, Herman M. Adler, Julian Mack, F. P. Cabot, and others (New Republic); *One Little Boy,* by Hugh de Sélincourt (Boni): *Vocational Aspects of Psychiatric Social Work,* prepared by the Section of Psychiatric Social Work of the American Association of Psychiatric Social Workers; *Our Enemy the Child,* by Agnes de Lina (New Republic); *The Conquest of Disease,* by David Masters (Dodd, Mead); *How to Feed the Baby,* by Dr. Lena K. Sadler (McClurg); *The Ministry of Health,* by Sir Arthur Newsholme, principal medical officer of the Health Department of England and Wales (Putnam); *The Preschool Age,* by Minnie Watson Kamm (Little, Brown); *Genius and Disaster,* by Jeannette Marks, the main theme of which is the part played by drugs and alcohol in the lives and work of certain famous writers, particularly Coleridge, Rossetti, Poe, Swinburne, James Thomson, Francis Thompson, Elizabeth Barrett Browning and De Quincy, (Adelphi); *The Mind and Its Place in Nature,* by C. D. Broad (Harcourt); *Prometheus or Biology and the Advance of Man,* by H. S. Jennings (Dutton).

Abstracts from Current Literature

BLOOD AND LYMPH GLANDS

Effect of Ultraviolet Irradiation on the State of Serum Calcium.—Alan R. Moritz (*Journal of Biological Chemistry,* May, 1925) describes a method for the separation of the diffusible calcium of the blood serum, consisting of applying a negative pressure of 150 mm. of Hg. on the outside of a collodion sac containing serum and immersed in water. Two c.c. of serum are required, and all of the diffusible calcium is obtained in the filtrate within five hours. Filtration for twenty hours failed to show any further liberation of the colloidbound calcium. Results by this method show a variability of about four per cent., and the method is sensitive to artificially induced changes in the percentage of the diffusible calcium of serum. No changes in the diffusible calcium were found after ultraviolet irradiation of serum *in vitro* and *in vivo*.

Observations on Blood Phosphates as Related to Carbohydrate Metabolism.—A. Bolliger and F. W. Hartman (*Journal of Biological Chemistry,* May, 1925) bring out the following points from the observations recorded: The diabetic state is demonstrated early in the curve of blood phosphates; blood phosphates are depressed during carbohydrate metabolism only when insulin is available; the complete absence of pancreatic hormone is shown by the blood phosphate level which remains unaffected as a straight line during carbohydrate metabolism; as concerns phosphate metabolism, pituitrin is a direct antagonist of insulin; carbohydrates and phosphates are best utilized when there is an excess of each in the circulation.

Combination of Phenol Red and Proteins.—Arthur Grollman (*Journal of Biological Chemistry,* May, 1925) says that the use of phenolsulphonephthalein as a clinical reagent in renal function tests has been criticized for its unreliability due to extrarenal influences. As a result of this investigation, two factors may be clearly defined which will have an extraordinary effect on the rate of the elimination of the dye quite independent of any renal influences. Since the amount of dye held by the serum proteins, and therefore unfilterable, is determined by the albumin percentage composition of the blood and the pH of the latter, these two variables must be considered in addition to the excretion rate. Thus in those pathological conditions in which there is a low albumin content of the blood with a correspondingly low albumin globulin ratio, the amount of dye held in combination with the blood protein is low, and this factor will greatly influence the excretion rate. Grollman has studied the adsorption of phenol red on charcoal and a number of proteins quantitatively, and gives the adsorption curves for blood serum and hydrophilic systems, together with the effect of pH on adsorption by proteins, and these results are compared with those obtained on charcoal.

Determination of Blood Sugar.—Stanley R. Benedict (*Journal of Biological Chemistry,* May, 1925) describes a new method for the determination of blood sugar in which the reagents used are an alkaline copper solution and a complex tungstic acid color reagent, the preparation of which and the technic of the test are given. The new method gives figures averaging some twenty per cent. lower than those obtained by the Folin-Wu method. Glucose added to blood filtrates is recovered satisfactorily by this proposed procedure, and figures by it indicate that the normal blood sugar content averages about 75 mg. in 100 c.c., though Benedict is still of the opinion that the actual glucose content of normal human blood does not usually exceed 60 mg. in 100 c.c., except after a period of food ingestion.

Intraperitoneal Transfusion with Citrated Blood.—David M. Siperstein (*American Journal of Diseases of Children,* April, 1925) emphasizes the fact that the introduction of citrated blood into the abdominal cavity must be regarded as a true transfusion. The good effects of intraperitoneal transfusion cannot be attributed to stimulation of the bone marrow as evidence of such a stimulation cannot be found. Clinical improvement obviously depends on the rate of absorption, which is variable. The basic factors involved are unknown. Physiological processes of obscure origin may be the cause. With the proper preliminary technic, the presence of free citrated blood in the peritoneum is entirely without danger. However, reports of peritonitis and injured viscera following abdominal puncture occasionally appear in the literature, but these are due, for the most part, to faulty technic.

The intraperitoneal transfusion of citrated blood should be regarded only as a substitute for a direct intravenous transfusion. The latter is always the method of choice. The attendant circumstances and the skill of the physician are the deciding factors. If transfusion is indicated and the other routes are unavailable or impractical, the intraperitoneal method may be employed. The harmlessness and the simplicity of technic make this procedure advisable. The clinical results obtained make it practicable.

Etiology of Hemophilia.—J. W. Pickering and R. J. Gladstone (*Lancet,* March 21, 1925) report that the hemophilic bloods examined by themselves coagulated in six to eight minutes at 40° C. This property may possibly be utilized in controlling oozing from wounds and epistaxis. Hemophilic plasma exhibits most of the characteristics of early embryonic plasma. The protective power against clotting of both hemophilic and embryonic blood is not due to the presence of an antithrombin. It appears probable that the delay in the clotting of the hemophilic bloods examined is due to the persistence or reappearance in adult life of an embryonic condition of the plasma, and that in both hemophilic and embryonic blood there is present a relative excess of a stable protective colloid. This conclusion is concordant with the theory of the fluidity and clotting of blood.

Blood Sugar Studies in Fatal Bacterial Anaphylaxis in the Rabbit.—Isolde T. Zeckwer and Helen Goodell (*Journal of Experimental Medicine,* July, 1925) with a view of determining any changes in the blood sugar level in rabbits, produced bacterial anaphylaxis by giving several sensitizing injections of killed organisms and then allowing a period of six to eight weeks to pass, when the injection was given which induced anaphylaxis. It was found that during bacterial anaphylaxis there is a gradual rise in the blood sugar level, which attains an extremely high value at the time of death. The curve of blood sugar is quite similar whether anaphylaxis is induced by organisms which affect the blood sugar in the unsensitized animal or by organisms which have no such effect. No instances occurred in which there was not a marked hyperglycemia in anaphylaxis.

Effect of Deep Therapy on the Blood in Leucemia.—W. L. Watt and J. Carter Braine (*Lancet,* January 3, 1925) draw the following conclusions from a study of eight cases of leucemia subjected to röntgen ray treatment:

1. From the commencement of the exposure to deep therapy radiations the leucocytes begin to fall, and the destruction is most marked during the last half of the radiation.
2. The subsequent fall may be interrupted by a fleeting primary reaction coming on two to five hours afterward, and by a secondary reaction which comes two to five days afterward and usually lasts twenty-four hours.
3. The susceptibility of the individual leucocytes varies with the type of leucemia, in the myelogenous type the myelocyte, and in the polynuclear type the polynuclear cell. However, no matter which type it is, the polynuclear, the lymphocyte, and the myelocyte, if present, all share in the fall, and also in the primary and secondary reactions.
4. With the fall of the leucocytes there is a rise of the red blood corpuscles and the hemoglobin. Conversely, when the red blood corpuscle and hemoglobin fall, the leucocytes rise.
5. The spleen steadily diminishes in size without undue rapidity and without any apparent deleterious effect. Likewise, the liver, when enlarged, and also the lymph glands, similarly diminish in size.
6. The health of the patient steadily improves and in uncomplicated cases, without any serious disturbance of compensation, they are soon back to full time work.
7. Splenectomy is not a contraindication, as the effect is almost as striking as if this organ were present.
8. Patients already subjected to a long course of ordinary x rays, with final failure to respond, are still susceptible to deep therapy with considerable hope of improvement.

The indications for further treatment are the following: 1, any marked increase in the pathological leucocytes, especially when accompanied by a drop in the hemoglobin and the red blood corpuscles; 2, the presence of enlarged glands in other parts of the body which show no signs of diminishing; these should be radiated separately; 3, failure of the spleen to diminish considerably in size, or its subsequent enlargement after having diminished; 4, the general health of the patient deteriorating.

The contraindications for further therapy are: 1, leucopenia; 2, persistent diarrhea, due to an excessive dose; 3, an actual increase of the pathological types of leucocytes after the radiation, unless only a small trial exposure had been given, in which case it would still be safe to give a full sixty per cent. skin dose; 4. deterioration in the patient's general health with failure of the hemoglobin and red blood corpuscles to rise. The liver should, generally speaking, not be exposed to the rays as there is much more liability to röntgen toxemia, a systemic condition with headache, fever, nausea, vomiting, diarrhea, etc. If, however, it is excessive in size and does not reduce with the spleen, small doses (thirty per cent.) to limited areas may be tried. The rays, especially the central rays, should not be directed toward the suprarenals, as they, like the testes and ovaries, are extremely susceptible to the rays.

Attempt to Find an Antipeptic Enzyme in the Blood.—Venice D. Keiser (*Journal of Laboratory and Clinical Medicine,* July, 1925) undertook an investigation of the protective antienzyme theory of gastric protection in view of the fact that peptic ulcer is considered a local autodigestion of the stomach. This theory, if it explains lack of autodigestion, should likewise be applicable to the etiology of peptic ulcer. The methods for demonstrating antipepsin, such as the liberation of dye and protein of Oguro and Hamburger, the gelatin liquefaction method of Sachs, the Matt tube principle, and polariscopic and refractometric methods were tested, and neither proved nor disproved the presence or absence of such a substance. More accurate methods must be devised before the question of the relationship between antipepsin and peptic ulcer can be answered.

Normal Rhythm of the White Blood Cells.—F. R. Sabin, R. S. Cunningham, C. A. Doan and J. A. Kindwall (*Bulletin of the Johns Hopkins Hospital,* July, 1925) found through the use of the socalled supravital technic that the number of the blood cells varies in a definite rhythm. There is an approximately hourly rhythm in the number of the white blood cells, which holds true also for the erythrocytes, platelets, and the reticulated red cells. During the afternoon, regardless of whether lunch has been eaten or not, there is an increase in the neutrophilic leucocytes. The rhythm of the lymphocytes is shorter than that of the leucocytes. A small proportion of the monocytes are normally undergoing division in the circulating blood. In five out of six apparently normal individuals, small percentages of myelocytes were found in the circulating blood.

Hemophilia.—Study of Blood, Clinical Course and Heredity in Three Cases.—Edward C. Davidson and Irvine McQuarrie (*Bulletin of the Johns Hopkins Hospital,* May, 1925) describe a typical, hemophilic family in which fourteen proved cases of hemophilia occurred in eight generations, and give detailed reports of two cases representing the sixth and seventh generations. Two normal female members of the same family presented no evidence of the disease, either clinically or from blood examination. The hereditary transmission occurred in this family according to the law of Nasse. Of the females capable of transmitting the disease 83.3 per cent. are known to have done so. Among the potential hemophiliacs 51.8 per cent. have proved to be bleeders. One typical case of sporadic hemophilia is described, in which the clinical picture and blood abnormalities are identical with those of the hereditary type of the disease. The blood coagulation time and the prothrombin time in the cases of hemophilia were from two to twenty-five times the normal. The finding of Minot and Lee of a qualitative platelet deficiency without a diminution in the number of platelets has been confirmed. The bleeding time, the capillary resistance, the nature of the blood clot when finally formed, the amount of blood calcium and the number of blood platelets were at all times found to be normal. Blood transfusion is the most effective treatment for the hemorrhage in hemophilia, and should be employed as a prophylactic measure preceding surgical operations.

Blood Platelets in the Leucemias.—George R. Minot and Thomas E. Buckman (*American Journal of the Medical Sciences,* April, 1925) maintain that a study of the blood platelets yields useful knowledge for guiding treatment and appraising the state of health of a patient with leucemia. In chronic myelogenous leucemia the numbers of these elements may be normal, enormously increased, or greatly diminished, and in chronic lymphatic and acute leucemia it is the rule to find them below normal. The fluctuations that occur in the numbers of blood platelets are discussed. Petechiæ and other hemorrhages associated with decrease of blood platelets are common, and hemorrhages, but not petechiæ, may occur in chronic myelogenous leucemia when the platelets are much increased.

Localization of a Lesion in the Brain by Differential Staining of Blood Smears.—Akira Sato (*American Journal of Diseases of Children,* March, 1925) asserts that acute lethargic encephalitis is the only disease in which the myeloid leucocytes in a fresh blood smear show a negative peroxidase reaction (copper method) while remaining positive under the oxidase stain of Winkler and Schultze. A bilateral puncture of the corpora striata is described which leads to a similar blood picture. This puncture has been named "peroxidase puncture." These facts have a reverse application, namely, a patient whose blood shows this characteristic staining reaction must suffer from a bilateral lesion of the corpora striata.

Influence of Sodium Chloride upon the Level of Blood Uric Acid.—Victor John Harding, Kathleen Drew Allin, and H. B. Van Wyck (*Journal of Biological Chemistry,* November, 1924) report that fifteen grams of sodium chloride added to a protein or carbohydrate diet lower the level of blood uric acid, and cause an increase in the sodium chloride in the blood, a decrease in serum proteins, and a total retention of water and sodium chloride. The decreased concentration of uric acid in the blood is believed to be due to an increased hydration of the blood, resulting in increased elimination of uric acid. On a constant sodium chloride intake little difference is found in the level of the blood uric acid when on protein or carbohydrate diet.

Nature and Significance of Reversible Hemolysis.—Wilhelm Starlinger (*Wiener klinische Wochenschrift,* November 20, 1924) states that inasmuch as the stroma of the red blood cells bears a negative electrical charge, additional cations must be adsorbed from it, as the absence of precipitation of concentrated heavy metals in the presence of the stroma can be explained in no other way. As a result of the adsorption of the cations, the stroma undergoes a change to a positive electrical charge, and the hemoglobin present in the solution, which receives a negative charge through the anion, is partially resorbed. This explans the immediate rapidity of the course of the reaction (ionic reaction!) and also the exclusive influence of the ionic values. In the same way it explains the slighter power of reaction of the defibrinated unwashed blood, in view of the electropositively charged fibrinogen (or fibrin), which is most probably precipitated partially during the course of the coagulation upon the surfaces of the red blood cells, and which may reduce extensively the primary negative charge of the same.

Noninfectious Leucocytosis.—O. H. Perry Pepper (*Medical Clinics of North America,* November, 1924) states that the three main groups of leucocytes have distinct characteristics and apparently distinct functions. These are: 1, the granular leucocytes—neutrophilic, eosinophilic, and basophilic; 2, the monocytes, and 3, the lymphocytes. The group characteristics of the granular leucocytes include rapid ameboid movements, phagocytic power, a proteolytic ferment, and a responsiveness to specific chemical stimuli. The neutrophil acts as a defense against most types of bacterial invasion; the eosinophil is in some manner related to the disposal of foreign protein in the body, and the function of the basophil is unknown.

The monocytes (large mononuclear leucocytes, transitional leucocytes, endothelial leucocytes) are as a group characterized by marked activity in the phagocytosis of particulate matter; they are capable of slow movement and they possess oxidase granules perhaps indicative of the presence of proteolytic ferment. They form an important part of the socalled reticuloendothelial system and have much to do with the destruction of wornout erythrocytes and with the

breakdown of hemoglobin. The lymphocytes enter the lumen of the intestine, there to be destroyed and to perform some still unknown function. Apparently they are in some way related to certain forms of immunity and bodily resistance, including that to tuberculosis and possibly to cancer. As a group they are peculiarly sensitive to röntgen rays and to radium emanations.

From these brief remarks it must be clear that to think of leucocytosis as always of the same type and always caused by infection is a very inadequate appreciation of the facts. Leucocytosis may result from a wide variety of causes besides infection; it may occur to a slight degree without any change in differential count and without the appearance of any immature or any marked increase in young forms. For the proper analysis of a leucocytosis these various considerations must be kept in mind. In practical everyday medicine the leucocyte count plays an important part, and we must constantly be on our guard not to be misled by it. In the great majority of cases there is little danger of error, but occasionally, as in cerebral hemorrhage, ruptured ectopic gestation and in paroxysmal tachycardia, all showing leucocytosis, the danger of serious diagnostic error is very real.

PEDIATRICS

Bacteriology and Specific Treatment of Infantile Bronchopneumonia.—A. Dufourt (*Presse Médicale,* June 20, 1925) reports bacteriological studies in over one hundred cases of bronchopneumonia in nurslings. The cultures were made from material obtained by direct puncture of the lung with a fine needle during life or from urine obtained by catheterization. The pneumococcus and enterococcos proved to be by far the commonest pathogenic agents. The writer agrees with Thiercelin and Rosenthal that the enterococcus is a very frequent factor in bronchopneumonia. Cultural features and agglutination studies are the only reliable means of differentiation, the morphology being often ambiguous. The enterococcus forms far more resistant cultures than the pneumococcus or streptococcus, readily living three or even six months without subculturing. It grows well in bile media, is not hemolytic, turns esculin agar black in one or two days, and is not agglutinated by antipneumococcic serums. Streptococci are not responsible for more than ten to twenty per cent. of bronchopneumonias, and these cases are nearly always secondary. The Pfeiffer bacillus and the catarrhalis and tetragenus organisms seemed to have little or no etiological rôle, and were always combined with the enterococcus or pneumococcus. Bronchopneumonias with small, scattered, stable foci are usually due to the enterococcus. The massive, pseudolobar forms are due either to the pneumococcus or the streptococcus, the former, however, generally leading to stable foci, while in the latter the involvement is apt to be serpiginous, with progressive displacement of the main seat of disease. The temperature curve in streptococcus bronchopneumonias simulates that of puerperal infection, with successive rises of a few days separated by descents nearly to normal, whereas the pneumococcus leads to a more even curve or plateau condition, and the enterococcus leads to rather irregular and sometimes extensive oscillations, but without the definite remissions or the sudden sharp ascents of the streptococcic cases. The latter cases run a more protracted and tedious course, are prognostically less favorable, and leave the children who recover profoundly anemic. Good therapeutic results were obtained in the author's cases of bronchopneumonia with vaccines, serums or both. The vaccine finally found best consists one third of pneumococci of Types I, II and III; one third or more, of various strains of enterococcus, and the remainder, of staphylococci and tetrangenus germs. The vaccine is sterilized by heat and contains about one billion germs to the mil. Of thirty-six cases of bronchopneumonia, including twenty-eight below two years of age, treated with this vaccine, thirty-six recovered. In nurslings and very young children the initial dose is 0.25 or 0.5 mil; on the second day, 0.33 or 0.5 mil is given; on the third, 0.5 or 1.0 mil, and on subsequent days, 1.0 mil, until fever has subsided and all auscultatory signs have disappeared. In older children or adults, the doses are doubled. Where no improvement follows the fourth injection, the case is probably streptococcic. In such cases, the writer adds to the vaccine a serum prepared from six strains of streptococcus by Sédallian, in doses starting at thirty mils. Undoubted successes were thus obtained in exceedingly grave cases.

Intramuscular Use of Ether in Pertussis.—Abraham Tow (*American Journal of Diseases of Children,* April, 1925) reports that fifty out of sixty-one children suffering from whooping cough were aided by the use of ether intramuscularly. The ages varied from twenty days to seven years. The number of paroxysms was reduced and their severity lessened; the patients slept better; their appetite improved, and vomiting also was lessened. Eleven patients were not aided. In the case of one adult, four injections produced an excellent result.

Seven out of eighty patients had necrotic areas at the site of injection. In this series, a commercial brand of sulphuric ether used ordinarily for anesthesia was taken directly from its container and was injected deep into the gluteal region. One cubic centimetre was given to all patients under one year of age, and doses up to two c.c. to those above that age. The injections were made daily for three to six days and then every other or third day, according to the need of the patient. If there was no improvement after five or six injections, they were discontinued. The point of election for injection was posteriorly about two inches below the middle of the crest of the ilium deep down almost to the bone.

The author concludes that ether intramuscularly is a valuable drug in the treatment of pertussis, but the danger of necrosis must be borne in mind.

Clinical Course of Vaccine Treated Pertussis in Private Practice.—C. A. Aldrich (*American Journal of Diseases of Children,* April, 1925) reports the results of vaccine therapy in a carefully followed series of sixty-five consecutive cases of pertussis and the results of vaccine prophylaxis is seventeen consecutive pertussis contacts seen during the same epidemic. The following conclusions are drawn:

1. As to the merit, patients treated after the onset of symptoms had slightly milder attacks, which terminated somewhat earlier than as outlined in standard textbooks. There were no complications except the usual bronchitis. There is evidence that in some the disease was aborted during the catarrhal stage.

2. As to the prophylactic value, definite evidence is shown that some cases were prevented, although in the absence of controls the percentage cannot be estimated. Only four of the seventeen patients given prophylactic treatment developed pertussis.

3. As to the course of the disease, the average duration was about six weeks, with definite and lasting improvement beginning less than four weeks from the onset. The average patient was up with paroxysms three to four times at night during the height of the disease. The vomiting was of short duration.

4. As to the best time for treatment, the duration of the disease and the length of time before improvement were approximately the same, regardless of the time of treatment, but the patients treated later had slightly severer attacks. The occurrence of several cases in which it appeared that the disease was aborted in the catarrhal stage, however, makes it seem advisable to give treatment as early as possible.

Acute Serous Encephalitis in Children.—Charles L. Brown and Douglas Symmers (*American Journal of Diseases of Children,* February, 1925) report a series of ten cases (of which five were observed by themselves) of acute serous encephalitis, a newly recognized disease of children. The youngest child was twenty-two months of age, the oldest seven years, the average age being less than twenty-eight months. The disease occurred five times in males and five times in females. The condition is of rapid onset and is initiated by such symptoms as irritability, lack of appetite, vomiting or diarrhea or both, and noticeably often by sore throat, the whole followed by elevation of temperature, sometimes to the extent of 105° or 106° F. and by signs referable to derangement of the central nervous system, among them bulbar signs in the form of respiratory irregularities, ptosis, strabismus, nystagmus, papilledema, retraction of the angle of the mouth, muscular twitchings, rigidity of the neck or jaw, hemiplegia, coma, convulsions and death within thirty-six or forty-eight hours or, at the longest, a few days. The cases are separable into two clinical groups, one in which convulsions are associated with one or several of the localizing signs which have just been enumerated; in the second group no such signs are present and the only obvious symptom of derangement of

the central nervous system is to be found in the convulsions. The most striking feature of the convulsions is that they are absolutely uncontrollable by any of the measures commonly employed for this purpose, including the use of such drugs as morphine and chloral.

Anatomically, the disease is characterized by extreme enlargement of the brain, with bulging when the dura is opened. The pia arachnoid is intensely engorged, and splotchlike hemorrhages may be present. The convolutions are flattened extraordinarily, the sulci are obliterated, and the brain is so soft as to give one the sensation of flowing. On section, the substance of the brain is pinkish.

Microscopically, the most constant changes are the hyperemia and edema of the pia arachnoid, engorgement of the bloodvessels of the brain, perivascular and pericellular edema, with or without vacuolation of the ground substance, and acute cloudy swelling of the pyramidal cells. Hemorrhages into the brain are very rare. In places, numerous glia cells are seen, each lying in what appears to be a vacuole, but represents an area of edema. There may be focal collections of a dozen or more cells made up of glia cells, together with lymphocytic and neutrophilic cells. Occasionally, there is proliferation of the endothelial cells of the arterioles. This seems to be a vascular disease attended by the escape of serum rather than of cells; that is to say, that the disease belongs in the same general category with the socalled encephalitis lethargica.

OBSTETRICS

A Sure Early Diagnostic Sign of Extrauterine Pregnancy.—Z. Banki (*Zentralblatt für Gynäkologie,* January 17, 1925) calls attention to an absolute early sign of extrauterine pregnancy, which consists of a sharp pain when the portio or entire uterus is pushed upward toward the symphysis pubis when one or two fingers are introduced into the posterior formix. It is said to be due to an adhesive peritonitis as a result of the oozing of blood into the cul-de-sac of Douglas previous to the rupturing of the tube. When corroborated by the history of the case it may be considered as an absolute sign of extrauterine pregnancy. It is also of value in the differential diagnosis from criminal abortion and appendicitis. It is of no value, however, in the exceptional cases of old adhesions in the cul-de-sac of Douglas even in the presence of an extrauterine pregnancy.

The Use of Mercurochrome in Obstetrics.—H. W. Mayes (*American Journal of Obstetrics and Gynecology,* July, 1925) believes an attempt should be made to sterilize the birth canal before every delivery. An antiseptic in the vagina during labor reduces the chances of infection during that period. In this connection he favors a four per cent. solution of mercurochrome, which is nonirritating. An eight months' clinical study of it showed fewer days of morbidity than when iodine was used. It is particularly adapted for induction of labor and all operative deliveries. It is preferable to iodine in vaginal preparations because it can be applied without an anesthetic, is painless, and entails no risk of irritation or blistering of the skin or mucous membranes of the vagina and rectum. Repeated applications of it can be made during labor and delivery. It seems harmless to the infants, and can be used in large amounts. The skin and mucosæ, though stained, remain soft and pliable. The drug does not coagulate protein, and can be applied to lacerated tissue without injury. In the preparation of parturients on admission, the author, after preliminary cleansing of the vulva with green soap and water, has the external genitalia and introitus of the patient, when she is in labor, painted thoroughly with the mercurochrome solution. The hips are then elevated and one dram of the solution instilled into the vagina with a large medicine dropper to which is attached a piece of catheter four inches long. In preparation for vaginal examination, delivery or induction of labor, the inner sides of the thighs, buttocks, lower abdomen and external genitals are sprayed with the mercurochrome solution and the vaginal outlet and anal region painted with it, whereupon two fingers are inserted in the vagina and one dram of the solution instilled and worked well into the mucosal folds and around the cervix or presenting part. Whenever the field becomes soiled with feces or otherwise, it is cleansed with saline solution and more mercurochrome used. If an hour or more elapses between vaginal examinations or between such an examination and delivery, the preparation is repeated. For induction of labor the patient is put in the Clark position and the bag inserted after the vagina is filled with mercurochrome solution; when the bag is tied, the vagina is again filled with the solution and a small gauze pack inserted. When possible, at least one hour should elapse between the time when mercurochrome is first put into the vagina and the beginning of delivery or any operative interference.

Prevention of Puerperal Morbidity and Mortality.—As the result of an experimental study in clinical obstetrics, Frances Ivens (*British Medical Journal,* March 28, 1925) draws the following conclusions:

1. That latent or preexisting infection, streptococcal, gonorrheal, or coliform, is responsible for a considerable percentage of cases of puerperal sepsis. That the organism may not infrequently be isolated by bacteriological examinations of the urine during pregnancy, especially in cases of streptococcal or coliform infection. That intermittent albuminuria during pregnancy is an indication for a bacteriological examination of the urine, even in the absence of urinary symptoms. That without latent infection uterine inertia is more likely to occur, especially when associated with premature rupture of the membranes. That bacteriological facilities for the examination of discharges during pregnancy, if utilized, will enable suitable precautions to be taken and an appropriate serum to be obtained.

2. That for the prevention of puerperal sepsis patients should be removed from unsuitable surroundings, especially when difficulty is anticipated, and that accommodation should be arranged so that patients may be admitted a day or two before labor is anticipated.

3. That a rigidly aseptic technic is as important as for a surgical operation. The patient should be carefully prepared and the vulva shaved before any vaginal examination is made during or immediately before labor. That well trained midwives can deliver a very high percentage of maternity cases if satisfactory antenatal examination and care have been given by the patient's doctor, and if skilled medical help, and, if necessary, institutional treatment can be obtained when required. Cooperation between midwives and doctors should be aimed at, and maternity homes should be worked in conjunction with hospitals where expert antenatal and obstetrical treatment can be obtained.

4. That with a reliable technic in good surroundings operative measures need not cause puerperal sepsis.

5. That in view of the need for study of the origin and character of the infecting organism in cases of fulminating puerperal fever, such cases should be placed at the earliest possible moment under the care of an obstetrical specialist and bacteriologist with facilities for research on the special type of organism.

Glycosuria of Pregnancy.—John T. Williams (*Boston Medical and Surgical Journal,* January 22, 1925) presents the following observations:

1. Sugar was found in the urine of 13.6 per cent. of five hundred pregnant women at some time during pregnancy.

2. It was found more commonly in primigravidæ than in multigravidæ.

3. In primigravidæ its incidence seemed to increase with the age of the patients. In multigravidæ no difference was observed.

4. It was found more commonly during the second half of pregnancy.

5. The sugar found in the urine during pregnancy is always glucose and not lactose. Lactose, however, is present in the urine of a considerable proportion of nursing women during the period of breast engorgement.

6. The ordinary glycosuria of pregnancy is physiological only and disappears after delivery.

7. The glycosuria of pregnancy is a renal glycosuria not being accompanied by any increase in blood sugar.

8. The physiological glycosuria of pregnancy must be differentiated from diabetes with which it has no connection. This can be done by determination of the blood sugar and by follow up work.

9. The physiological glycosuria of pregnancy is the result of the normal hypertrophy of the posterior lobe of the pituitary body during pregnancy. Increased activity of the posterior pituitary lobe causes glycosuria during pregnancy just as it does when due to pathological causes. After delivery as the pituitary involutes the glycosuria disappears.

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Medicolegal Notes.

ADDITIONAL DAMAGE FOR ALLEGED NEGLIGENCE

In an action for the death and suffering of an infant child, in the delivery of whom the femur of the left leg was broken, the plaintiff claimed that the jury should have been instructed as to the liability of the defendant for the negligence of a doctor who was afterwards called in to attend the child. This claim was based upon the rule of damages recognized in Massachusetts and other cases, that a person injured through the negligence of another may recover of that person such additional damages as result to him from the negligence or want of skill of a physician called in to alleviate or cure the initial harm, if the person injured exercised reasonable care in selecting a competent physician. The jury, however, had found for the defendant substantially that there was no original negligent act or want of the required skill on the part of the defendant in his treatment of the child. The Massachusetts Supreme Judicial Court therefore held, Kos v. Brault, 146 N. E. 16, that there was no issue to which the requested instruction was applicable, and the request therefor was rightly refused.

PROCEDURE IN REVOCATION OF REGISTRATION FOR ASSISTING UNREGISTERED PRACTITIONER

The Supreme Judicial Court of Massachusetts, Davis v. Calderwood, 146 N. E. 708, holds that Gen. Laws, c.112, regulating the practice of medicine in Massachusetts and conferring powers of registration of physicians and of revocation of such registration for cause, the constitutionality of which has been decided or assumed in several prior Massachusetts cases, is valid.

The statute (Gen. Laws, c, 13 § 10) requires a hearing before a public board, at which the practitioner in a proceeding to revoke registration may be represented by counsel and call witnesses, with provision for further hearing in court and for revision and reversal of the finding of the board if justice demands such action. Every constitutional right is held to be protected.

It is held that the notice to be issued to a registered physician of such a hearing is not to be construed with technical strictness. It is to be assumed also that further specifications would be given on proper request in any instance when the subject matter was not fairly set out in the initial notice. Every presumption is to be made in favor of the regularity and fairness of the methods of procedure and of the proposed action of such a board.

It is held that under Gen. Laws c. 112, § 2, assisting an unregistered person in practicing medicine is a sufficient ground for the revocation or cancellation of a registration.

HEARSAY STATEMENTS TO PHYSICIAN AS TO CAUSE OF MALIGNANT GROWTH HELD ADMISSIBLE

The Maryland Court of Appeals holds, Standard Oil Co. of New Jersey v. Mealey, 127 Atl. 850, that hearsay statements of a deceased workman made to his wife and to his physicians that he had fallen and struck his side at a spot where a malignant growth later developed, were properly admitted on the issue whether his death from lympho-sarcoma or leukemia resulted from accidental injury, under Maryland Workmen's Compensation Act, §§ 10, 56.

OPTIC ATROPHY FROM THE ACTION OF ULTRAVIOLET RAYS HELD NOT COMPENSABLE

The Ohio Supreme Court holds, Industrial Commission of Ohio, 146 N. E. 305, that where the action of ultraviolet rays resulting in injury to the optic nerve of a moving picture operator, caused optic atrophy, the condition was not the result of traumatic injury or accident, and therefore was not compensable under Ohio Gen. Code, § 1465-68.

HYSTERONEURASTHENIA FROM ELECTRIC SHOCK HELD COMPENSABLE

In proceedings under the Illinois Workmen's Compensation Act, there was medical expert testimony that while the effects of an electric shock are immediate, hysteroneurasthenia is a common result of such an accident and will disable a man as completely as a physical impediment. The evidence was held to warrant the conclusion that the claimant was suffering from some trouble which incapacitated or partially incapacitated him for physical labor. The Illinois Supreme Court held, Harrisburg Coal Mining Co. v. Industrial Commission, 315 Ill. 377, 146 N. E. 543, that if the accident did not directly produce the effects complained of the shock to claimant's system produced in his mind the conviction that his health and physical vigor were destroyed, resulting in hysteroneurasthenia and incapacity to work, and that he was entitled to an award of compensation for permanent partial disability.

BLOOD POISONING FROM SCRATCHING PIMPLE WITH INFECTED FINGER HELD COMPENSABLE

The New York Court of Appeals holds, Connelly v. Hunt Furniture Co., 240 N. Y. 83, 147 N. E. 366 (by a court divided four to three), reversing 212 App. Div. 225, 207 N. Y. Supp. 695, that the injection of gangrenous matter from a corpse into a cut in the hand of an embalmer's assistant was an accidental injury arising in the course of employment, warranting compensation for his death from blood poisoning when he scratched a pimple on his neck with the infected finger.

DAMAGES FOR FACTURE OF FEMUR IN ACCIDENT

The New Jersey Supreme Court holds, Peters v. United States Stores Corp., 127 Att. 274, that a verdict of $10,000 to a woman, aged 36, injured on the forehead in an automobile accident and by a fracture of the right femur resulting in a shortening of the right leg of one and one-half inches and a permanent impairment of the functions of the leg of 60 per cent. requiring the use of a crutch thirteen months after the accident, was not excessive.

MANDAMUS HELD NOT TO LIE TO COMPEL REINSTATEMENT OF PHYSICIAN WHERE APPEAL LIES FROM REFUSAL TO REINSTATE

The Washington Supreme Court holds, Russell v. Dibble, 231 Pac. 18, that an appeal lies from the refusal of the board of state medical examiners, or the director of licenses, its successor, to reinstate a physician whose license has been revoked, and that such right of appeal is not inadequate, because such delay as would have occurred would not be unreasonable under the circumstances, and upon appeal the court would have full power to go into the merits of the controversy, the statute providing that such matters shall be tried *de novo*, as civil actions are. It is therefore held that in such a case mandamus will not lie to compel reinstatement, since a writ of mandamus will not issue if there is a plain, speedy and adequate remedy by appeal.

LEGACY TO HOSPITAL MERGED WITH ANOTHER

A legacy to a hospital, which before the testator's death was consolidated with another hospital, was held payable to the consolidated corporation. In re Doane's Estate, 208 N. Y. Supp. 320.

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Some Aspects of Carcinoma of the Rectum and of Carcinoma in General*

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For several years I have been greatly interested in carcinoma in general, as well as in that type involving the rectum and sigmoid, with which I am particularly concerned. Have assisted in the propaganda of Cancer Week, both in my city and state, and have published some essays, notably as regards etiology.

Therefore, prior to a consideration of rectal carcinoma, I propose to review some recent work on etiology and diagnosis, starting with that of Sandes, of Australia. He observes that in many physiological and pathological processes the potassium atom plays an important part. So far as is known it is the only one in the body which gives off electrons similar to radium. Its intimate relationship with calcium and sodium maintains the functional efficiency of protoplasm. It is, as it were, a key to cell life, and the coarse adjustment (of which the hydrogen ion is the fine) in the maintenance of cell function. Further, by reason of its radiations, it is a potent mechanical factor in the energizing of cell constituents so that vital phenomena are produced. In the presence of long continued irritation the reaction of cells to injurious stimuli and the pathological consequences therefrom, Sandes suggests, are largely due to disturbance of their potassium distribution and metabolism, and in certain malignant growths the same cause is at work. It is well known that radiations of different wave lengths are capable of creating and curing inflammatory and malignant conditions. The cell is a reversible engine in this respect, and the potassium and hydrogen ion concentrations the most likely to be affected.

Years ago Mottram, in Lazarus-Barlow's laboratory, showed that the potassium content of the red cells in cancerous patients is considerably higher than in health (1.5:3), while the sodium content shows no change. Moreover, while the sodium content of all carcinoma is about the same, that of potassium in primary growths is higher than in secondary, and of squamous celled tumors higher than of spheroidal celled.

Another physiochemical theory is that of Perrin, of France, which was recently referred to by Magrou: This regards the production of tumors as due to radiation, the dislocations of chromatin accompanying caryokinesis are set up by excessively frequent radiations, the cells act as sounding boards, entering into vibration (i. e., caryokinesis), if they are in the path of light rays of the necessary frequency. This agrees with what we know of the action of radium and of x rays. It may be objected, adds Magrou, that very few individuals are subjected to the action of radium. But, he continues, every living being contains within itself another source of feeble radioactivity—potassium—which, as the experiments of Nègre and others show, is capable of encouraging the development of cancer grafts. Magrou believes if it be demonstrated that this action of potassium depends on its radioactivity, we are authorized to conclude that the genesis of tumors is related to some disturbance of the potassium compounds normally impregnating the tissues.

Barclay, the English radiologist, at the last meeting of the American Medical Association, read a thoughtful paper on the problem of malignancy, which he considered from a purely radiological viewpoint. As a result of experience in three remarkable cases, it occurred to him that perhaps a malignant growth might be originated by a malignant causative disease and these elements might exist concurrently, or the causative disease having started the malignant overgrowth, might die out, leaving the growth to cause death of the patient. There are evidently different types, histologically identical, i. e., radiosensitive and insensitive. Since all tissues can be killed by destructive doses, all growths are classed as radioinsensitive which have the same or greater tolerance than the surrounding structures.

Whenever we see a patient with cachexia, apart from septic absorption, we know that, no matter whether the mass responds or not to x rays, the patient will steadily go down hill, and in the terminal stages the temperature will rise, quite apart from any sepsis. Its presence is often suggested in those malignant diseases of slow growth in which metastases are not attacking vital organs, and it gives one the impression that the ordinary causes of death in these diseases (extension and sepsis) are not only accidental, but that many of these growths are only an incident in an underlying malignant disease. Barclay calls this hypothetical quantity, this essential

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underlying process, x, and believes it may disappear after originating the growth, and also it may vary in intensity, quite apart from the type of growth it evokes. In the radiosensitive type we may hope for complete success if we can locate and heal the primary focus and its metastases, but if x is still at work, even in a very mild form, we shall fail, for sooner or later recurrences, even if of the radiosensitive type, will come where we cannot detect them, and death follows. In the radioinsensitive type we can do nothing but watch the progress of the growth and its metastases. If we are to find the cause of malignancy we must attempt to determine accurately in which of our cases x is still at work, and find out in what way the blood differs from those where the disease is only locally present, i. e., where x is no longer present. If one might indulge in pure speculation one might accept x as a temporary or permanent blood condition, very slight changes determining whether its action should influence one or another of the different types of cell to cancerous growth. Suppose at the time of this slight blood indisposition there was irritation of, say, the breast cells by some cause, it might stimulate these cells to disordered overgrowth, forming a malignant tumor that would run its fatal course, while the underlying malignant disease, the blood change, entirely disappeared. The patient is operated on and there is a socalled cure. One could imagine the same sequence again after many years, and surely this is more reasonable than to think of malignant cells lying dormant for perhaps twenty years.

But few of the alleged microbic causes of carcinoma deserve mention and one of these is the micrococcus found by Nuzum. I attach some importance to this, not because the discoverer is a fellow townsman, but because my friend the late A. J. Ochsner was firmly convinced to the day of his untimely death that the true cause had been found. His opinion is all the more weighty since in addition to his enormous clinical experience, Dr. Ochsner was a master of microscopic technic in his early career, and for many years made it an invariable practice every Sunday morning to inspect the slides made from the tissues removed at operation the previous week.

In 1921 Young, of Edinburgh, announced the discovery of the causal organism, and a year ago furnished some further investigations. According to these, the organism in question can "grow independently in any one of the following forms: a large yeastlike body of varying sizes, cocci of differing size, bacilli and threads of a granular or uniform character and of varying thickness, minute granules and an amorphous material, which appears as regular globules or as irregular masses of greatly differing staining capacity. . . . The original fungus is capable of devolving into all the other forms, and during its metamorphosis it practically invariably first becomes transformed into a homogeneous structureless material or plasm in which the new elements appear as minute granules. The plasm is thus totipotential; it can generate yeast, coccus, bacillus or thread." (For the peace of mind of future medical students it is to be hoped these findings which overthrow all previous knowledge of bacteriology are incorrect.)

A few weeks ago the papers were full of cablegrams from England that the "cause of cancer" had finally been tracked to its lair. Even allowing for the notorious inaccuracy of newspapers when reporting any scientific discovery, it seemed as though something of importance had transpired. The issue of the London *Lancet* with the articles of Gye and Barnard, is just at hand, and their preliminary report therein contained holds out some promise, it is true. However, the neoplasms investigated were the Rous chicken sarcomas, and while at first these were not looked on as true malignant tumors as understood in human pathology, I believe they are so regarded at present, though with a few dissenting voices. Possibly the technical methods described will put us on the right track, and further reports will be impatiently looked for.

Long since Virchow stressed chronic irritation as a potent cause, and as one phase of the precancerous state seems to be growing more and more in favor.

W. J. Mayo last fall, in one of his many masterly addresses, stated: "I have never observed a case of cancer in which there had not been some preexisting instability of the tissues, and a longcontinued irritation. It would seem as if the longsuffering tissues respond to the chronic insult of the injury by supplying cells less and less mature, until finally the tissues reach a stage in which there is uncontrolled production of unsound cells, too immature to heal the breach of continuity, or to furnish protection to normally protected tissues."

Speaking of irritation, a case reported by McGraw and Schrankel, seems conclusive. They give the details of the case of a woman, aged forty-one, who had the left leg amputated in midthigh at the age of eight, on account of an injury. At twenty-three she fractured the patella, which was repaired by open operation. Since then she had used two crutches, holding them close to the body so that the mammæ were compressed toward the midline. As a result hard masses developed in both mammæ, and biopsy revealed carcinoma.

Coplin refers to an interesting example of growth apparently caused by two entirely distinct irritants in a röntgenologist who was a heavy smoker. In addition to lesions on the fingers, a labial cancer developed; the latter was excised about six weeks after it appeared and never recurred. The x ray growth finally caused death some ten years later.

Another recent and striking instance is narrated by M. Peraire (Paris) who said he had had occasion to perform total hysterectomy for fibroma complicated with epithelioma on a patient, on whom he had operated twenty-one years previously for salpingooöphoritis of right side with appendicitis. Examination of the specimen showed the carcinoma had started at the old cicatrix on the right ovarian pedicle, and then followed the uterine mucosa and the vagina.

Borrel (in 1905) showed that many mice with cancer were infested with cysticerci of a tapeworm found in the cat, and a year later surmised that the cysticerci might carry a cancerous virus with them; however, he soon abandoned this latter. It was not long (1907) before Fiebiger (in Denmark) found a similar state of affairs: Eggs of a nematode worm being eaten by cockroaches, and these in turn eaten by rats, develop in the stomach of the rats. As a result there are enormous epithelial proliferations, especially

about the cardia; polypi form and hang free in the stomach. In some, not all animals, malignant tumors ensue with metastases. It is interesting to note that, according to Joyeux, the causal worm dies early, but the irritation set up gives rise to continuous tumor growth.

Further corroboration was afforded by Sambon a year or so ago, who found in Italy the same vicious circle of cockroaches and mealworms—rats and mice. In some districts of that country he found cancer in humans very common, and the same parasitic worm as in Denmark present in sheep, cattle, goats and hogs, involving the esophagus and cardia as it did in human beings. Moreover, during a tour of Iceland he found cancer had never been heard of in the inhabitants of a remote and desertlike district, nor were there rats, mice or cockroaches.

The lesions produced in the bladder and rectum by another parasitic worm (Bilharzia) have been known for many years, but of late it has been discovered that carcinoma may develop ultimately on these lesions; Ferguson especially has emphasized this. In South Africa also, Pirie examining thirty-six primary carcinomas of the liver in the native blacks, found they were a sequel of cirrhosis. Moreover, in ten cases the cirrhosis was clearly superposed on bilharzial lesions, and probably was also in the remainder.

The long series of successful animal experiments in which carcinoma is produced by irritation of the skin from painting on tar, and other materials, was begun by Yamagiwa and Ichikawa nearly a decade ago. In his late article, the latter states he now obtains thirty per cent. of successes, and nearly two per cent. of metastases, and concludes that simple chemical and physical irritation if repeated renders the normal epithelial cell cancerous, without interposition of other causes. Finally, that he is a firm partisan of Virchow's theory.

Speaking at the International Cancer Conference at Strasburg (1923) Murray, of the Imperial Cancer Research Fund, observed that the extent of the surfaces to which irritants, tar, etc., were applied had no influence on the rapidity of production of cancer and the percentage of successes. The frequency of the applications and the intensity of the irritation, on the contrary, played a great part. The successful result is due, in part, to irritations of medium intensity and not too close together. This accounts for the fact that cancer is rare among workers in chromic acid, though they may have ulcers from the acid (chrome holes), and similar industries. The resistance of the animals varies greatly, ranging from three to eighteen months, before success is had, while some individuals are utterly refractory.

A fortnight prior to Gye's communication, Kennaway furnished the account of some experiments on cancer producing substances at the Research Institute of the London Cancer Hospital. He was able to produce tarlike compounds which turned out to be particularly successful in causing epithelial growths, yet such compounds were comparatively simple, being made up of carbon and hydrogen only. Attempts to produce similar substances from previously living tissues were again successful—a socalled tar from yeast, as well as a product obtained by distillation of human skin had this cancer producing property.

A petroleum which produced no tumors of any kind in mice in a prolonged experiment showed very active cancer producing properties after exposure to a temperature of 880° C. The cancer producing substance in coal tar is formed only in small amounts under 450° C.; at 560° C. it appears in much larger quantities, and this increase continues at a slower rate up to 1250° C.

There are many other examples of irritation giving rise to carcinoma: The famous kangri burns, of Kashmir, the chewing of betel nut by their neighbors, and—nearer home—lingual and buccal growths from jagged teeth or illfitting dentures, etc., but limitations of space forbid anything but brief mention. An essential in all these cases is that the irritation be long continued. Thus, Wyeth alludes to a case where radical measures were indicated in an epithelioma, some forty-seven years after the original injury; in the meantime there had been an interminable succession of trauma, infections and ulcerations. This long continued irritation, of course, may account for the fact that carcinoma is more frequent in the aged.

One disconcerting feature of the experimental irritations was, I believe, first noted by the late E. F. Bashford, of London: instead of carcinoma developing, the resulting tumor was a sarcoma. Similar experience has been had since in other laboratories, and is looked on by some writers as showing sarcoma and carcinoma are due to the same cause. Assuming this to be correct, it seems strange the clinical behavior of the two neoplasms should differ so—sarcoma often arising from a single trauma, spread by the bloodvessels, generally attacking younger subjects, and in structure showing little resemblance to the epithelial growths.

All this has led me far afield from my habitual hunting ground—the rectum and pelvic colon, but is introduced preparatory to subsequent remarks on prophylaxis.

Some authors lay stress on hemorrhoids as an etiological factor in rectal carcinoma. Thus Rosser writes: "One cannot but be impressed by the number with a history of piles for years before the malignancy appeared." The proportion of cases of carcinoma with hemorrhoids varies from 3.75 per cent. in Kocher's clinic according to DuPan, to thirty-eight per cent. (Zinner). No doubt some—maybe many—of these were symptomatic from disturbed circulation due to the tumor. Since practically every adult has hemorrhoids at some time during life, if they have any causal influence, it seems to me the ravages of carcinoma—extensive as they are—would be materially increased. Anyway, carcinoma usually occurs above the zone affected by hemorrhoids. In my book I refer to 1,828 instances, seventy per cent. of which were in the ampulla, and the figures I have collected since show the same preponderance.

The question of heredity comes up in connection with etiology. Several years ago Levin studied a number of families for several generations, analyzing the family incidence from the viewpoint of Mendel's laws of genetics. As a result of these investigations he concluded the frequency of carcinoma in the families studied was no greater than that of the populace at large.

On the other hand, early this year Mummery gave the history of three families, the members of which

had had adenomatosis for several generations, and a large proportion died of cancer of the rectum, and that at a comparatively early age; e. g., in one instance seven between twenty-seven and fifty-four years.

DIAGNOSIS

So late as August 16th last Drummond writes: "Intestinal obstruction, acute, subacute or chronic, the discovery of a tumor, and bleeding from the bowel, are the chief indications of intestinal cancer." A good example of English conservatism! What is wanted is not a recital of such terminal symptoms when even the patients themselves suspect they have cancer, but some means of detecting the presence of cancer in the interior of the organism in the early stages; unfortunately this is still lacking.

Quite recently Fry, of the Research Institute of the London Cancer Hospital, described a method of serum diagnosis: The antigen is prepared from carcinoma of the mammæ, and composed of the alcohol soluble constituents. This alcoholic extract, strengthened by cholesterol, is standardized and added to four dilutions of the inactivated serum to be tested. After incubation, a preliminary reading is taken at the end of three hours, the end result being determined after twenty-four hours at room temperature; if positive, flocculi appear in the tubes. A series of five hundred malignant and nonmalignant conditions were tested, and seventy-five per cent. of correct results obtained; in the cancer cases positive results were had in seventy-one per cent. and in the noncancerous seventy-eight per cent. of negative results; while the controls from healthy subjects were negative in all but one. The antigen, it is said, is very similar to that used for the Wassermann reaction, but syphilitic serum does not seem sensitive to Fry's test. In 233 cases of malignant disease, twenty-one positive Wassermanns were obtained, in contrast with the 170 positive flocculations. Of 253 Wassermanns on the controls, eighteen were positive, but there were only seven positive flocculations.

Further investigations may corroborate the value of this reaction, but equally glowing claims were made for the methods introduced by Abderhalden, Ascoli, *et al.* In his essay on serological diagnosis in cancer, Lavedan describes a total of three types and sixteen varieties each with several subvarieties, and concludes: "Early serum diagnosis of cancer remains to be discovered." While written just previous to Fry's article, Lavedan has great hopes apparently for Botelho's method, which Fry states: "has been shown by me to have little diagnostic value," and so we must wait hopefully it seems.

In connection with diagnosis I wish to refer to the question of age: We instinctively, as it were, look on carcinoma as an appanage of old age, but evidence is rapidly accumulating that this condition may affect comparatively young subjects. In my treatise, I tabulate some early ages as follows: eleven years, three;; twelve years, five; thirteen years, three; fourteen years, three; fifteen years, four; sixteen years, two; seventeen years, six. Since then Phifer, placing a case in a man, aged nineteen, on record, collected forty-eight cases in the rectum and pelvic colon in young subjects—six to ten years, one; eleven to fifteen, twenty-two, and sixteen to twenty, twenty-five. Applehaus also recounts one in a man, of twenty-five. This early age incidence holds good for other organs as well, e. g., uterus, at twenty years (Heusinkveld); liver, at thirteen years (Johnson), and others.

As regards diagnosis of rectal cancer in general, recent case from Homans (Boston) can be duplicated in the experience of all of us: A man, less than fifty, appearing in robust health, for past two months had discomfort pretty continuously, moderate dull ache in lower abdomen, and a sense of a lump in the epigastrium. His troubles were neither brought on by nor relieved by eating. His bowels, previously regular, had become moderately constipated so he found himself taking cathartics. Physicians consulted several times had reassured him as to the seriousness of his condition. The abdomen was soft, easily palpated and not distended. No tumor could be felt and rectal examination was negative. However, a barium enema disclosed a narrowing and irregularity in the rectosigmoid region, and this was confirmed by proctoscopic examination. Later, a typical cancer was resected.

In eight cases narrated by Küttner, the diagnosis was obscured by the presence of tuberculosis. While Rokitansky, the famous Vienna pathologist, asserted long ago that tuberculosis and cancer would not be found in the same subject, it has since been found this statement is too sweeping. Christèn met with a family history of tuberculosis in 25.5 per cent. of his cases of rectal cancer. On five occasions Kuttner found tuberculosis of lungs masked the bowel tumor, and in the others the systemic condition (weakness, anemia, and other conditions) had been atributed to tuberculosis and no examination made of rectum.

I dismiss considerations of diagnosis with the statement that about half of the subjects with cancer of the alimentary canal, seen by Lenoir in Paris, had excess of blood sugar. This may lead to some practical application.

Taking up operability next, in the Continental clinics this used to range from nineteen per cent. (Boas) to over four times this, or eighty per cent. (Von Bergmann). In Great Britain Miles estimated it at seventy-five per cent. A few years ago Back questioned a number of his colleagues in London, as to their estimates of operability—the extremes were twenty and forty per cent., Back's own estimate is under thirty. In this country our president a year ago stated sixty-one per cent. of 110 cases were operable; it is interesting to note that even of the anorectal growths eight out of fourteen were inoperable, and—as we should expect—nine of the eleven rectosigmoid ones.

With the improvements in technic of recent years, the percentage of operability has materially increased, e. g., at the Mayo Clinic it rose from fifty-one to 71.8 per cent., while the operative mortality decreased from 17.7 to 12.5. This increase of operability is in great part due to interventions even though the contiguous structures be involved—prostate, uterus, vagina, small intestine, etc.

Again, enlarged lymph nodes were a formal contraindication not long ago. A few years back McVay of the Mayo Clinic studied one hundred rectal cancers removed by operation. Over six nodes from each specimen were dissected out, and carefully examined. As a result he decided "the size of the growth cannot be relied on as an accurate index of the probable

lymphatic involvement. The growths without involvement tend to grow into the lumen, those with slight involvement to spread by direct extension and are slow growing. Carcinoma of the rectum, with extensive glandular involvement, tends to metastasize early. Lastly, systematic microscopic examination of all regional nodes in carcinoma of rectum appears, as it does in stomach, to be the best method of accurate prognosis."

It has been shown, principally at the Mayo Clinic, that the enlarged nodes are often merely inflammatory and not cancerous.

Paterson is another example of British conservatism: In his discussion of mammary cancer, he remarked that the proportion of five year cures appears to be the same about as twenty-five years back, when the axilla was not cleared out as a routine, but only when evident the nodes were affected. He believes, as well, that nothing is gained by removing the adjacent nodes with the primary tumor. They are a protective barrier to the spread of cancer cells, and may be removed later with much greater safety.

At Rochester, Broders has formulated an "index of malignancy" which while based on the squamous celled variety, may be available for the cylindrical celled growths which mostly interest us as proctologists. Taking 1,628 specimens he divided them into four groups representing grades of cell maturity: Grade 1, tumors in which the majority (seventy-five per cent.) were differentiated, and thirty-five per cent. undifferentiated or embryonic. Grade 2, cancers where the two types were about equal; Grade 3, in which only twenty-five per cent. showed differentiation, and Grade 4, in which none of the cells approached normal. The end results of operation were then looked up, and it was found good results were obtained in Grade 1 in ninety-two per cent., in Grade 2 in sixty-two per cent., in Grade 3 in twenty-five per cent., and in Grade 4 in only ten per cent. This grading was confirmed in a larger series.

As regards end results long survivals were possible even after the crude methods of the eighties and nineties of the last century. Boeckel, twelve years; Czerny, sixteen years, twenty-four and a half years; Bull, twenty years. The late C. T. Dent, of London, operated November 2, 1882, on a man of fifty-two, by the old fashioned perineal route. The nodes were removed from the ischiorectal fossa, the bowel could not be brought down, but the anus was preserved and good control persisted for solid and partial for liquid feces. Readmitted on January 29, 1920, with evident metastases in liver from which he died in three months.

I have gone into this subject at considerable length in my treatise, so shall only add some of the statistics which have appeared since taking them in chronological order: In Paris, Demarest had 43.4 per cent. of satisfactory results by perineal extirpation after removal of coccyx, though the series was small. Jones and McKittrick state that while the pathologist found no involvement of the perirectal tissues or nodes in sixty-eight per cent. of the specimens removed by them, yet all but 11.3 per cent. of the patients were dead in five years, whether metastases were met with outside bowel or not. Of the subjects dying within three years, ninety-two per cent. had involvement of regional nodes, liver or perirectal tissues when operated on; on the other hand, twenty-three per cent. of those with metastases solely in the regional nodes or the perirectal tissues lived three years or over. Lecène recording survivals of ten, twelve, fourteen and a half and fifteen years, respectively, after the combined method, stated he has never had a ten year survival after the perineal or after the Kraske operations. In his address already quoted, Mayo remarked that at the Clinic, when the cancer had not extended beyond the primary focus, over seventy per cent. of patients are cured, but when beyond such focus, only nineteen per cent.

Küttner gives an account of an enormous number (eight hundred) of conservative sacral operations: About one third with three year cures, and about one quarter with five year; complete continence in 52.9 per cent., almost so in 17.6 per cent. Quite recently Gabriel has given the results in 143 perineal operations by Lockhart-Mummery: The operative mortality was 15.4; some forty-four deaths later (eighty per cent. within three years). Of the remainder thirteen could be traced, so sixty-four are alive, five with evident recurrence. In the remaining fifty-nine, the survivals have been thirteen years, one; ten years, one; nine years, one; over eight years, two; and five to eight years, nine. The functional results in most instances extremely good.

On some occasions the prospective end results are vitiated by the fact that there are multiple growths in the bowel, and the lower one only may be discovered and attacked. Details of five cases of this nature have been published by Miller, and may be due either to multiple primary foci, or to implantation from the higher mass to site below in the intestinal canal.

So much for the end results of operative treatment. I have been interested lately in reading of the natural duration of cancer, on which two articles have appeared in England—one last summer, the other early this year. In my work I refer to the mean survival of inoperable cancer in Kocher's clinic as being twelve months from the first symptom, and to seventy-one of Cripps's cases with extremes of three and thirty-six months, and an average of 7.8. The first of these English articles is by Lazarus-Barlow of the Middlesex Hospital, which you remember has had a cancer department since 1792. He analyzed the cases for forty years, and while he takes up the cervix, mamma, and so on, of course we are only interested at present in the rectum: No cases in which other than palliative operations (colostomy) were performed are included. He found 345 instances—172 males with extremes of three and eighty-six months, and an average of 20.4; while in 173 females, three and 122 months, and the average 25.9.

The other paper is by Wyard of the Cancer Hospital, and deals with 450 cases over a lesser interval (twenty-four years). The sexes are not divided, and the extremes were three and 372 months, with means about the same as in Barlow's cases, or twenty-nine months. An interesting feature is pointed out by Wyard, and that is colostomy did not prolong life, the duration is exactly the same in patients after this operation and in others without operation.

Poor diagnoses are not always responsible for the low per cent. of operability. As far back as 1911 Wainwright gave some findings of the Pennsylvania

Cancer Commission: In 210 individuals with superficial cancer in sixteen different locations (including 102 of mamma) thirty-nine per cent. showed precancerous chronic irritation, the average time after the first cancerous symptoms before advice was sought was eighteen months, and the average time between first consultation and operation thirteen months. Of 188 subjects with deep seated cancers, forty-six per cent. gave evidence of precancerous chronic irritation. The average time lost after first symptom was fourteen months, and twelve more before operation.

In 1920 Simmons and Daland investigated 519 cancers at the Massachusetts General Hospital as to the reason for delay, among them forty-four of rectum. Delay to consultation, 8.4 months; delay before operation was advised, 5.3 months, and 0.7 months more before operation was done. Last year they published results in 339 more subjects—taking all sites the average duration of delay until first consultation was 4.6 months, and from first consultation to operation advised, 2.9 months. It will be seen the delays were less in Simmons and Daland's first series than in Wainwright's, while in the next series it was still less.

Concerning radium therapy: A year or so back Howard Kelly gave his results for the previous decade. 1. In cases treated with radium alone, actual cures 8.5 per cent., with palliation in 69.5 per cent., about half of the latter living over eighteen months. 2. The group with colostomy plus radium gave the fewest cures (6.3 per cent.) but most palliations (68.7 per cent.); moreover, 45.5 per cent. of palliations lived eighteen months or more. 3. Radical surgery plus radium, here the percentage of well subjects was highest (17.5 per cent.) over half were improved; and most of these again, lived eighteen months or over. In this group when admitted 8.6 per cent. were recurrent or hopeless, 27.5 per cent. recurrent and extensive.

Experience elsewhere seems less favorable: At the London Radium Institute, e. g., Pinch states they believe the results of the combined operation far exceed anything to be expected from radium. Lecène had but mediocre results, though he agrees it may be of use in delaying the course of inoperable tumors. In some instances Küttner saw remarkable benefits from radium and x rays, others were unchanged, some improved for a time only, in still others the course seemed accelerated.

The results at the Memorial Hospital (New York) were elaborated by Quick a short time ago: In the four previous years some 160 cases had been treated. A large number were benefited for one to three years, and then succumbed to the disease or to intercurrent affections. Some were in such good condition definitive cure was hoped for. In a few instances the palliation was such that the subjects were able to continue their occupations, though periodical examinations showed the tumor was still present. The oldest cures were of four years' standing, and with marked fibrous stricture due to insufficient screening. On many occasions the condition improved for a time, then metastases soon appeared. He points out that it is useless to subject individuals with such metastases to radiation. Exploratory laparotomy is justified, if tumor is too extensive, useless radiation will be avoided. And, if localized, laparotomy often enables emanation tubes to be inserted in the growth itself.

In the recently issued Fasciculus XIV of the *New Treatise on Medicine,* Bensaude, the Parisian gastroenterologist, states radium is formally contraindicated where there are metastases, for radium excites cancer cells when the primary focus is at a distance. In many instances, he continues, it seems to have neither benefitted nor acted injuriously; though he had rare cases where the action was beneficial. In two others, the combination with x rays produced remarkable effects, though too recently to tell whether permanent or not.

At the Mayo Clinic, according to Bowing (in the last number of *Radiology*) from June, 1919, to June, 1924, some forty-three cancers of rectum were resected, in which radium alone or combined with x rays had been applied before operation; in thirty-five a short time after permanent colostomy. Of these thirty-three could be traced, fifteen dead, and of the survivors, ten are alive, three years after the first application of radium, six between two and three years and two less than a year. He decides the best results are possible only by a sufficient interval between the first radium application and the operation, for all the important effects on the tissues to have subsided, and such time is to be estimated in weeks rather than days.

Two years ago MM. Pauchet and Buquet stated they had applied radium and six weeks later did the perineal operation. "The cancer was not cured." It seems unreasonable even granting the alleged thaumaturgic properties of radium to expect cure in a little over a month.

Finally as regards prevention: In my article in the forthcoming Chicago issue of the *Surgical Clinics of North America,* I use a Hibernicism to the effect that the time to prevent fistula is before you get it, and the same holds true for cancer. How? First, by keeping a vigilant watch over the rectum. How? By repeated systematic examinations. Second, by the removal of all pathological conditions liable to provoke cancer. When? As soon as recognized. How? By that operative technic which will result in the least scar tissue.

There is no use in trying to save a "house on fire" when it is completely enveloped in flames, and the smoke coming out of doors and windows. So it is with cancer of the rectum with the mass practically obstructing it, and the symptoms of ulceration—bleeding, pain, diarrhea, etc.—after the whole system is permeated with its poison. The rectum is one of the most important organs in the body, more so than an eye, ear, kidney, testis or ovary. Should one of these be lost there is still its mate to subserve the purpose of the economy, not so when the terminal bowel is destroyed.

Since 1908 I have iterated and reiterated my suggestion (made at the meeting of our society that year) that every person who has reached the socalled cancer age should be examined at regular intervals for evidence of commencing carcinoma; not necessarily in the rectum alone, but in the female, e. g., of the uterus and mamma as well. Neither patient nor practitioner should allow their interest in these periodic examinations to slacken. At that time I referred to the case of Powers, of Denver, in which such

examinations were made at regular intervals after excision of a mammary cancer, and eighteen years elapsed before the search was rewarded by discovery of a recurrence in the scar.

A much longer period before recurrence is placed on record by Steward (London) early this year. A woman of eighty-one was operated on thirty-one years ago by the late Sir Henry Butlin; he was a celebrated surgeon of his day, with a work on *Diseases of the Tongue* in which he laid stress on cancer, and was the sponsor of the *Unicellula cancri* theory of malignant growth, so probably the intervention was thoroughly done. A few months before seen by Steward after over thirty years of apparent good health, three small nodules were discovered by her medical attendant in the immediate vicinity of the scar, and grew slowly. For two months there were also enlarged veins over chest on same side with some breathlessness and pain. The nodules were hard, each about a half inch wide, dull on percussion. Death in a few hours. Steward believes this to be recurrence in skin and mediastinum; this seems probable, though in such a long interval there may have been independent foci.

Last fall, Bloodgood, of Johns Hopkins, referred to educational efforts especially about cancer of the mammary gland: The records in the Laboratory of Surgical Pathology were divided into decades—the first from 1890-1900, the fourth starting with 1920. The per cent. of inoperable cases has decreased steadily, and is most marked after 1915. The improvement in operability in all regions is greater than the improvement in the per cent. of five year cures. He feels quite confident that in the breast, lip, tongue, skin, the per cent. of permanent cures will show a great increase since 1919, but there is no evidence of this improvement in the gallbladder, stomach, rectum or colon.

From February 17 to 24, 1924, a campaign was carried on in Detroit during Cancer Week and the results are tabulated by Salzstein: Over one thousand persons applied for examination at the hospitals during that period. Of 874 records turned in, it appears that forty-two cancers were found, or 4.8 per cent. of entire number. These figures include only cases where the existence of the tumor was unsuspected, or improper or inadequate treatment advised or given. Of the forty-two cases it seems passing strange that sixteen (nearly half) were in the mammæ, none were discovered in rectum. While of seventy-five precancerous conditions, twenty-three again were benign tumors of breast; a polypus was the affection met with in the rectum.

At first sight Salzstein's figures do not seem to substantiate my advice for repeated systematic examinations, but some six hundred years before Christ, a humpbacked Greek, named Æsop, among other wise sayings wrote that "One swallow does not make a summer." Moreover, if the examinations are repeated often enough in the same series of patients, we may be sure cancers of the lower bowel will be discovered, and that early in some instances. It may be that a good proportion of the patients examined were under the typical "cancer age." It is notorious that polypi are often precursors of malignant disease, and if nothing else was found in the 874 persons, it seems to me the search was well worth while.

This campaign must not be allowed to slow up. In the last issue of the *Illinois Health News,* published by the State Department of Health, we read that in 1902 cancer was seventh in the order of frequency of causes of death. In 1923 it stood third, being exceeded only by cardiac diseases and pneumonia.

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The author's references will appear in his reprints.

Dyspepsias from the Ileocecal Region*

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Dyspepsia has probably a greater numerical occurrence than any other single symptom. It has a multiplicity of productive causes ranging from the slightest dietary indiscretion to the severest organic disease. An analysis of the more persistent cases reveals the significant fact that intrinsic disease of the stomach is an etiological factor of quite minor importance and relative infrequency. In only about twenty per cent. of cases presenting the symptoms of indigestion and dyspepsia is there disease of the stomach; in forty per cent. the lesion is not in the stomach, but elsewhere within the abdomen; and in the remaining forty per cent., the pathology is not within the abdominal cavity.

In the first group (intrinsic stomach disease) the most prominent conditions productive of indigestion are: peptic ulcer, malignancy, and errors in gastric chemistry.

In the second group (extragastric but intraabdominal disease) the commonest causes are a pathological condition of the gallbladder and of the appendix regions. Anatomical abnormalities of the female generative tract and pelvic inflammatory disease may also be placed in this group. More especially, disease of the ovary is frequently the productive cause of indigestion. Not uncommonly, severe nausea and vomiting occur concomitantly with the menstrual epoch.

The third group (extraabdominal conditions) contains, as productive causes of dyspepsia, tuberculosis, cardiac disease, nephritis and the neurotic state.

Therefore, of a hundred cases of dyspepsia, in only twenty will there be a pathological condition that is directly responsible for the gastric symptomatology.

Cabot makes a clinical distinction between regular

*From the Surgical Service of Professor Charles Gordon Heyd, New York Post-Graduate Hospital. Read before the Surgical Conference, New York Post-Graduate Hospital, March 26, 1925.

and irregular dyspepsia, and draws an inferential conclusion as to the nature of the pathology from the clinical picture. The regular dyspepsia obtains where the pathological condition is intrinsically gastric. The irregular dyspepsia is that of reflex production.

Regular dyspepsia is characterized by an unaltering repetition of a syndrome typical for the patient. The chronological occurrence of pain and distress, in relationship to the ingestion of food, is of clocklike precision. Distress always follows certain definite articles of food and relief is occasioned by the same measures.

Irregular indigestion is characterized by extreme variability. Foods which may at times cause severe distress may, at other times, be eaten with relish, unassociated with untoward symptoms; and there is lacking the periodicity of the onset of symptoms.

The ileocecal region is an area that commands attention because of certain anatomical and physiological facts peculiar to itself and in its linking up, in intimate relationship, with the rest of the digestive apparatus. Tracing the alimentary tract from the pharynx to the anal sphincter, there are certain definite points of normal stasis that indicate some change in functional activity and chemistry. The two most important points, or, rather, the two points that mark the most extreme changes, are at the pyloric sphincter and at the ileocecal valve.

The stomach concerns itself with digestion; the small intestine, with the completion of digestion and absorption; the large intestine, with the completion of absorption and evacuation.

Chemically, the normal medium of the stomach is acid. Beyond the pyloric sphincter the medium is alkaline and the ileocecal valve denotes a point of change from an alkaline to an acid medium.

The cecum, moreover, represents a site of maximum fluidity of intestinal content, predominance of lymphoid tissue and maximum bacterial activity.

A study of the lymphatics of the area demonstrates that there are two chains of farreaching importance. One connects the cecum and the right kidney. Remembering the cecum to be the point of maximum bacterial activity the predominance of right sided pyelitis and bacilluria is accounted for. The other chain runs from the appendix region to the gallbladder. Sudler has demonstrated that there is no barrier between the intrahepatic and extrahepatic lymphatics, but that there is an unobstructed lymphatic passage between the gallbladder and the liver. From this point the lymphatics pass down to the pancreas, an organ which Deaver likens to a lymph node at the terminal point of a lymphatic chain. Therefore the lymphatic system would seem to be the connecting link in infections of the appendix, liver and gallbladder and pancreas.

The terminal ileum is separated from the cecum by a competent valve that has a direct functional association, through nerve connection, with the pyloric sphincter. Some physiologists hold that the ileocecal valve is in fact a sphincter itself. In man, it plays the rôle of a sphincter; in cats and dogs, it bears a close anatomical resemblance to a sphincter. For our consideration, it is interesting to note that these two important barriers, the pyloric sphincter and the ileocecal valve, work in a definite relationship to each other. The ingestion of a glass of water, that would close the pyloric sphincter, will also cause a relaxation of the ileocecal valve. Only at the time that the pyloric sphincter is closed can ileal contents pass into the cecum. This is an anatomicophysiological phenomenon that can find its inception at either point. In other words, if the pyloric sphincter can control the status of the ileocecal valve, so can the ileocecal valve control the status of the pyloric sphincter.

In a nicely organized and well functioning gastrointestinal tract, this synchronism of relaxation and closure takes place as a part of normal activity and produces no noticeable effect upon the patient. When, however, the pyloric sphincter takes hold outside of the normal digestive cycle, there follows an interruption of the motor expression of the stomach, and the patient is then made to feel distress.

A peristaltic impulse does not pass from one end of the digestive tract to the other without guidance along its course. There are eight points of specialized nervous tissue along the tract which Keith describes as nodal points, and which closely resemble the nodal tissues of the heart. Four of these nodal points have been definitely demonstrated, and four are surmised with reasonable certainty. They are, 1, at the junction of the pharynx and esophagus; 2, at the cardiac orifice; 3, just beyond the pylorus near the ampulla of Vater; 4, at the duodenojejunal flexure; 5, the ileocecal sphincter; 6, about the midpoint of the transverse colon; 7, the junction of the sigmoid and rectum; and 8, within the anal ring.

At this point it would be well to recall to mind a fundamental conception of the gastrointestinal tract that will serve to explain many of the symptomatic vagaries of which it is capable. I refer to what was called by Bayliss the "law of the intestine," which states that stimulation of any part of the intestine leads to contraction above and relaxation below. This is an expression of Nature's effort to remove an offending object by exaggerated function—hypermotility, hypersecretion and hypertonicity. Violation of this law causes aberrant activity which produces subjective symptoms. For example, stimulation of the pylorus causes closure of the ileocecal valve; and irritation of the cecum causes spasm of the pylorus. And here we see the rôle of the appendix in the production of pylorospasm, with its consequent gastric symptomatology. The presence of infection in an active state is not necessary to produce cecal irritation. A competent productive cause can be an old fibrotic appendix with its attendant adhesions; a long appendix that tugs at its mesentery; a kink in the mesentery itself, or perityphlitic adhesions—monuments to many repeated attacks of appendicitis of mild character.

In a strict sense the term appendicitis should be used to define inflammations of the vermiform appendix. It has, however, obtained a broader clinical significance, embracing various inflammatory affections of the right iliac fossa with which inflammation of the appendix is associated as a more or less important factor. Formerly the term typhlitis was much in use and was based upon the idea that inflammations of the region designated, originated in the cecum and head of the colon and spread from these structures to the surrounding tissues. Modern investigations have shown that in the great majority of instances typhlitis and perityphlitis have their origin in primary

appendicitis, and for practical purposes, these cases should be dealt with as cases of appendicitis.

Notwithstanding the fact that various surgical writers have denied the existence of primary localized inflammations of the cecum without appendicitis, there is abundant evidence, as shown by MacWilliams, that such a condition can exist, independent of tuberculosis, malignancy and such causes; and that when the condition does occur, the etiological factor is ordinarily fecal stasis in the cecum.

After the element of infection has ceased to operate, or where the element of infection is too mild to command surgical consideration on its own merits, we still find the appendix often to blame for trouble that it reflexly causes through the medium of a neuromuscular complex. This is the type of appendicitis that resembles the ulcer syndrome. Everybody who does more than an occasional operation has had the experience of demonstrating, on laparotomy, an ulcer to be nonexistent in a patient who presents all the clinical manifestations of having had one. Moynihan's dictum that the pathology for most peptic ulcers is found in the right lower quadrant cannot be too often repeated.

In conclusion, it may be stated that many cases of irregular indigestion, where the stomach, duodenum and biliary apparatus can be vindicated, will be cured by an appendectomy, however innocent the right quadrant may appear to be.

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Pernicious Anemia*

Report No. 2

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Continuing the subject of pernicious anemia from eight months ago (1), it can be stated in reference to Case II of that series (No. 6081), that the patient improved sufficiently to return, at his own request, to his home, four months after he was seen at the clinic. How long his arrest will hold good we do not know. It is our intention to follow the progress of these men.

Case III of that series (No. 5814), the patient is present. When the patient was last presented his red blood count was 2,300,000; his hemoglobin was 80 per cent.; color index 1.7 plus. His remission held until about February 2, 1925, when his hemoglobin registered 45 per cent., and his red blood count was slightly over 2,000,000. Seven days later his hemoglobin was 35 per cent, and red blood cells 1,584,000. He received several transfusions of 500 c. c. each, the last one recorded was May 12th. On June 10th the red blood count was 1,500,000; the hemoglobin 25 per cent.

During this exacerbation of his anemia, the spleen was two finger breadths below the costal margin and he had fever every afternoon. He is in another remission. He is weak, as you see; complains of dyspepsia; has evidence of changes in his cord, viz., hyperactive upper extremity reflexes, unequal knee jerks, and some impairment of coordination in his upper extremities. His liver is three cms. below the costal margin, spleen is not palpable at this time. Spastic anal sphincter. His blood picture on August 6, 1925, was hemoglobin 40 per cent.; erythrocytes, 1,680,000; color index, 1.2; marked achromia; poikilocytosis and anocytosis; macrocytes but no nucleated reds.

Just this week mercurochrome (2) twenty c. c. of a one per cent. solution has been given intravenously. As to the results of this type of treatment we hope to have something to say at the next clinic.

Case IV.—History No. 6806-BF; admitted to this hospital March 30, 1925, complaining of weakness, gastrointestinal disturbance, stumbling in the dark, and loss of twenty pounds weight in the last three months. Aged sixty-four, he had dysentery in 1898, which was first diagnosed pernicious anemia in Government Hospital No. 59, where he was confined in bed for ten weeks the latter part of 1923. In February, 1925, he had a remission.

His weight was 156 pounds; fair amount of subcutaneous fat; first degree edema of legs and ankles; arcus senilis; sclera, icteric; heart, enlarged to the left; systolic murmur at apex; protruding hemorrhoids; free fluid in the abdomen; spleen, palpable; liver three finger breadths below the costal margin. There was a slight fullness in the epigastric region which was tender to palpation with some muscular rigidity. There was a slight suggestion of a tumor mass under this area. There is one small hemorrhoid but four tests all show no occult blood in the stool. X ray findings on G. I. series show slight six hour retention in the stomach; evidence of adhesions; evidence of colitis. Gastric analysis showed an absence of hydrochloric acid; red blood cells, 2,360,000; hemoglobin, 40 per cent. Nervous system, corneal reflexes were absent; pupils, irregular and reacted unequally to light; he had a marked weakness; inequality of the deep reflexes of the upper extremities; poor coordination of the same; knee jerks and tendon achilles reflexes were absent.

In spite of the blood transfusions, of five hundred

*From Department of Internal Medicine, Soldier's Home Hospital, Sawtelle, California. Clinic held for the Santa Monica Branch of the Los Angeles Medical Society, August 11, 1925.

c. c. each, today his hemoglobin remained 27 per cent., red blood cells 900,000, which gives a color index greater than 1.

On account of cord changes, absence of hydrochloric acid, and his blood picture, the condition had been diagnosed as pernicious anemia secondary most likely to gastric ulceration, possibly malignant, for we are mindful of a history of internal hemorrhage eighteen months prior to his admission. He is one of the oldest patients we have studied. How long he has been suffering and how many recrudescences he has had we do not know. It is a fact that the cause for the grave anemia, as well as that in Case III, has not been discovered.

The most pertinent question in regard to pernicious anemia is its etiology (1). Shuman at the previous presentation of these cases before you concluded that, "first, pernicious anemia as a diagnostic entity should be relegated." "Second, that it has as a cause a long standing toxemia." "Third, this toxemia is usually due to bacteria, causing a high grade hemolysis, which exhausts the blood forming system."

He considered that, "its cardinal symptoms: grave anemia, hemosiderosis, general weakness, moderate loss of weight, tachycardia, fever, increased metabolic rate, gastrointestinal, visceral, and cord changes were the result of a defense reaction of the body, as a the blood destruction in Addisonian anemias is due to a bacteriolysis destroying the invading organism and liberating the toxic molecule which is then free to combine with the body cell (for example, the cord cell) and in the case of the erythrocyte causing a high grade hemolysis formation without a correspondingly high antihemolysis formation."

In a review of some of the recent literature on grave anemias, the general tendency as O. B. Hunter (2) pointed out is to discard the idea of essential anemias and to regard them all as secondary, or as a symptom of a disease complex. He concluded "that the blood destruction in Addisonian anemias is due to some hemolytic agent and not faulty proliferative activity on the part of the bone marrow; the hyperplasia seen therein, being a regenerating effort to keep up with lysis.". In that connection Christian (3) cites "a close clinical similarity between patients with pernicious anemia and those with polycythemia." Calling attention to the fact "that both too little and too much blood can cause similar symptoms the blood and bone changes found in both conditions being perhaps secondary and relatively often unimportant." It has been pointed out "that the blood picture in pernicious progressive anemia is no different from many other chronic hemolytic anemias, with definite etiological bases."

In the Todd classification of anemias the progressive pernicious anemia (Addisonian type) is placed among those due to hemolysins or increased fragility of erythrocytes," as Shuman stated in his paper.

O. B. Hunter (2) observed "that all of the cases in his series, either showed a frank pyorrhea alveolaris or increased amount of oral bacterial flora, spirallary forms.

P. B. McLaughlin (4), "assuming from the pathology found, the usual periodical rise in temperature, and the jaundice which is almost continually present, decided pernicious anemia, in all probability is caused by infection," and used mercurochrome as an antiseptic intravenously in its treatment and obtained surprising results in bringing about a remission in the disease.

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Postoperative Parotitis

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Postoperative parotitis while not a frequent postoperative complication is an interesting phenomenon which deserves more attention and study than has been accorded to it.

Munde (1) described as early as in the seventies the occurrence of postoperative parotitis after ovariotomy. The first reported cases all followed operations on the female reproductive organs. Paget (2), however, in 1886 directed attention to the fact that parotitis may develop as a rare secondary manifestation following various operations in the lower as well as in the upper abdomen.

The infection may be carried to the parotid gland by three different ways: 1, hematogenous, 2, lymphogenous, 3, ascending, i. e., by way of Stenson's duct. The primary focus of infection is usually localized either in the oral cavity, which harbors a multiplicity of germs, or in the abdominal cavity where the bacteria may have been present before, or were inoculated during, the operation.

Contributory factors in the development of postoperative parotitis are as follows: the pressure on the parotid gland during manipulations on the jaw by the anesthetist; the lack of mastication resulting in stagnation of infectious material in the oral cavity; the dryness of the mouth following anesthesia, favored by the administration of purgatives and atropine before operation, and the limited intake of fluids after the surgical intervention.

Pathologically the infected parotid gland may present a picture of a simple inflammation or the infectious process may progress to a diffuse or circumscribed suppuration; a real gangrene is sometimes observed.

The postoperative parotitis usually begins between the third and the seventh day after the operation. The local symptoms consist in stiffness of one or both sides of the face and swelling of one or both parotid glands with pain on pressure. The general symptoms are: malaise, elevation of the temperature and pulse rate, leucocytosis. The prognosis is serious: Wagner states that postoperative parotitis ends in death in thirty per cent. of the cases.

In regard to the therapy nearly all the authors recommend an early institution of surgical treatment. Fantozzi (3), advises incision at once. Fischer (4), Friedrich (5), Wagner (6), Collins (7), express the opinion that a free incision and drainage should be resorted to early. Blair (8) also is in favor of an early surgical procedure. Le Dentu (9) thinks that the revealing of the suppuration ought not to be awaited. Frank (10) concludes from his experience that when the swelling does not show any tendency to decrease in size in about four days, it is advisable not to wait for fluctuation, as the location of the pus is beneath the dense parotid fascia.

Our experience does not support this view as can be seen from the following history.

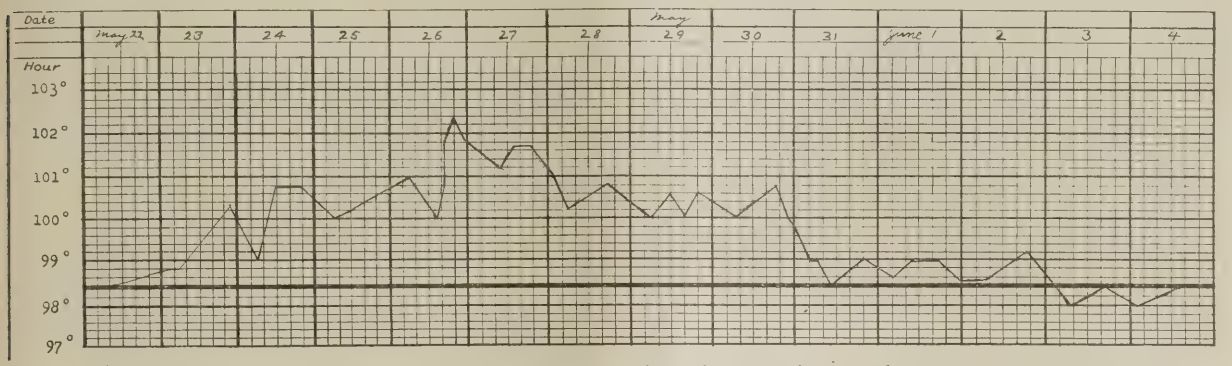

FIG. 1.—Temperature chart of patient whose case is reported.

REPORT OF CASE

CASE.—A woman, aged forty-eight, married, was admitted to the Lutheran Memorial Hospital on May 22, 1925, with complaints of distress in the hypogastrium and metrorrhagia. The physical examination was essentially negative except for the presence of multiple fibroids in the uterus. A supravaginal hysterectomy was performed the following day in the usual manner. A hypodermic injection of morphine sulphate one sixth grain and atropine sulphate one one hundred and fiftieth grain was given one hour before the operation. The pathological diagnosis was intramural fibromyomata of the uterus. On May 25th, the third day after the operation, the patient began to complain of stiffness in the lower jaw and a numb feeling in the right side of the face. A typical mumps was visible the following day. The leucocyte count was 16,900; the erythrocyte count 4,700,000, hemoglobin was eighty per cent.

Applications of hot boric acid and alcohol solutions were ordered and a mouthwash used every hour. The condition of the teeth was good. On May 27th, the fifth postoperative day, a fully developed parotitis on both sides was present. The swelling had a hard consistency, and there was a bluish discoloration of the skin over the affected area. Under continuous hot compresses, interrupted only by daily applications of therapeutic light the swelling of the parotid glands regressed without any surgical intervention and the temperature which reached 102.4° on the fourth day after the operation was normal on the twelfth day. The patient left the hospital on the thirteenth day in perfect health.

We believe that in regard to the prophylaxis the necessity of oral hygiene should be emphasized. The condition of the teeth should receive the attention of the surgeon before the operation. After the surgical procedure efforts to maintain normal secretion of saliva should be made. Lemon stick candy promotes salivation in a satisfactory way. If a postoperative parotitis develops not only the local but also the general condition of the patient should be taken into consideration, when the question of surgical intervention is discussed. Daily leucocyte counts are advisable; a rising count indicates suppuration; because of a dense fascia fluctuation may not be present or appear very late. If there are no signs arousing suspicion of a developing septicemia and if the general condition of the patient is satisfactory a conservative treatment may be instituted, consisting of antiseptic mouthwashes, promotion of salivation, compresses of hot boric acid and alcohol solutions supplemented by applications of therapeutic light. A watchful observation of the patient is essential; aggravation of the symptoms necessitates incision and drainage, but many disfiguring scars may be avoided if the patient is treated according to the rules outlined above.

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The Modern Treatment of Fractures of the Lower End of the Radius

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For some time past injuries in the region of the wrist joint, more especially fractures of the lower end of the radius, have occupied a considerable share of my attention and study. Several factors were responsible for my interest in the subject.

In the first place, fracture of the lower end of the radius is without doubt the most frequent fracture coming under the care of the general practitioner. This is readily shown by a study of any large series of fractures in general, and this fact alone is sufficient to give it marked importance, in view of the severe disability which may and does follow improper treatment.

Furthermore, as others have shown, and as recent work of my own demonstrates (1), fractures of the lower end of the radius fall into two great classes, depending upon whether or not union of the radial epiphysis has occurred; within each of these classes, in the vast majority of cases, the pathology of the fracture is peculiar to the class to which it belongs; it is always the same as regards site of fracture, displacement, and other factors, and differs only in degree of severity, depending probably upon the extent and violence of the force producing it. This is true of no other fracture, unless it be with the possible exception of the socalled Pott's fracture. Such being the case, it would seem that a standardized treatment, applicable to practically all of these cases, might be evolved and generally adopted, which with but few exceptions would give uniformly good functional endresults. The modern method of treatment, to be described later, fulfills these requirements, and gives good results; but judging from some of the cases which I have seen in my own work, while the method may be generally known, it is far from being generally practised, at least so far as some of the details are concerned, and it is upon these details that success or failure depends.

In addition to these considerations, with widespread workmen's compensation laws such as exist today, fractures of the radius assume an economic importance, both to the patient and to the employer or insurance carrier, which they have never had heretofore. While not common in industry in general, nevertheless the aggregate loss as a result of these fractures is considerable, and any measures which tend to shorten the temporary, and reduce the permanent disability are of great value, since individuals are thus kept out of the handicapped class, and the financial burden upon society at large is thereby somewhat lightened.

These are all excellent reasons for the careful study of fracture of the lower end of the radius. It is a subject of importance for every physician in active practice. Formerly such fractures were reduced more or less completely, or if impacted, frequently an attempt was made at reduction; they were then immobilized in a circular cast, often with the wrist in an unnatural and distorted position, and Nature allowed to take her course for a period of five or six weeks. In a large majority of cases, the result of this treatment was a hand and wrist more or less permanently disabled and deformed; not infrequently, the degree of disability was great enough to produce a distinct handicap in the use of the hand; far too often it was of such an extreme grade that the hand was practically useless. This was especially true if the patient was middleaged. Today such a result in the average case is a reflection on the physician in charge, and simply means gross negligence. If the condition under discussion is treated according to the modern principles of fracture management, the outcome is nearly always good. Let it be distinctly understood that I have reference here to the average case; in the unusual one, in which are associated extreme comminution of the fragments, marked displacement, and severe and extensive damage to the soft parts, we may with justice expect a certain amount of permanent disability, although even in such a case, the results are often surprisingly good. Under these circumstances, the surgeon can only do his best. But I believe that any one having occasion to examine any considerable number of claimants for compensation, cannot fail to be convinced that there are still too many poor results in the average case of fracture of the lower end of the radius. To emphasize once more the essentials of the modern treatment of this fracture is the purpose of this paper.

It was formerly generally taught and practised that the proper treatment for the socalled typical fracture of the radius was reduction, followed by fixation of the hand in a position of volar flexion and adduction. The dressing, frequently a circular cast of plaster of Paris, was left on for two or three weeks before it was disturbed, after which attempts at passive motion and massage were begun. The results of such treatment were highly unsatisfactory in a great many cases, consequently modifications of this method began to be tried. These at first consisted principally in shortening the time of fixation, and in beginning the functional treatment earlier. The results of this still left much to be desired, and some few surgeons advocated purely functional treatment, using practically no fixation whatever; Lucas-Championnière even disregarded reposition of the fracture. The latter teaching gained but little acceptance, and has now rightly been abandoned; but treatment without fixation still has some advocates. Theoretically, to my mind, it undoubtedly has some advantages; practically, with the average ambulant patient, it cannot be employed. The danger of a new dislocation is always present, pain is often more severe than when fixation is employed, and occasionally late absorption of the primary effusion with excessive callus formation has been observed. Furthermore, even though these objections could not be urged against this method of treatment, I am of the opinion that patients generally would not readily accept it, for the average layman cannot believe that any fracture can be treated without some form of splint. Under such circumstances, if the result of

treatment were not all that could be desired, the attending surgeon would find himself the subject of much unpleasant criticism, and it is conceivable that he might find it necessary to defend himself in court.

To offer any assurance of success, the method of treatment employed must take into consideration the complete pathological picture of the fracture. It cannot be directed exclusively toward bony union, disregarding the soft parts and joints, as is the case with the older methods; nor can the break in the bone be practically ignored, as is done when fixation is not employed. Therefore, modern successful treatment of fractures of the lower end of the radius depends upon three factors: first, early and complete reduction; second, proper and intelligent application of immobilizing apparatus, with the hand and wrist in a physiological position, and third, the early and intelligent employment of massage and passive motion. These factors are all interdependent, and are all equally important; neglect of any one of them will jeopardize the ultimate success of the treatment. If we consider each of them a little more at length, it will be obvious why this is true.

With the exception of simple fracture of the styloid of the radius, in which there is usually no displacement, reduction, or better, reposition of the fragments is indicated as the first step in the treatment of practically every case of fracture about the lower end of the radius, including those with impaction. The necessity for complete correction may be better appreciated if we analyze the displacement present in the average case. It is not a simple backward displacement of the lower fragment. In the first place, this lower fragment is carried backwards and a little upwards, as a result of the direct violence at the moment of fracture; secondly, as a rule, in falls particularly, due to the fact that the main violence is received by the thenar eminence in the extreme pronated position of the hand, and also due to the fact that the ulnar side of the radius is more or less firmly attached to the ulna by the inferior radio-ulnar ligament, while the radial or outer border is free, this outer side of the lower fragment is displaced more than the inner; the wrist and hand follow the small fragment, leading to a greater or lesser degree of abduction; and lastly, in addition to displacement of the lower fragment *en masse,* it also undergoes some rotation about a transverse axis, with the result that the articular surface is directed posteriorly as well as downward. Since any one of these displacements will give rise to interference with the function of the wrist joint, by changing the plane of the radiocarpal articulation, the importance of complete reduction becomes readily manifest.

Now, how is this reduction to be accomplished? As a rule, it is a comparatively simple procedure. While it is undoubtedly true that many fractures can be reduced while the patient is fully conscious, nevertheless I believe that in most cases better work can be done under general anesthesia. The latter is a necessity in hypersensitive patients, and in neglected or difficult fractures. A cardinal principle in the reduction of all fractures is muscular relaxation and this must be as complete as it is possible to obtain. It is very necessary in fractures of the lower end of the radius, and frequently can be secured only by having the patient anesthetized. The technic of reduction which I use, and which I believe to be capable of the most general application, is as follows: The hand of the patient is grasped by one hand of the operator, whose other hand surrounds the patient's forearm with the thumb over the site of the fracture, in a position to exercise pressure on the lower fragment. The wrist is then placed in a position of extreme hyperextension, which relaxes the muscles and the dorsal periosteum over the fracture, if it is not torn through. The latter condition is not infrequently present, and under these circumstances this untorn bridge of periosteum, tightly stretched as it is by the dorsal dislocation of the lower fragment, constitutes a decided obstacle to reduction; it can only be relaxed by extreme hyperextension. With the wrist hyperextended, strong traction is made in the direction of the long axis of the forearm, and the fragments are disengaged; when this has taken place, the wrist is brought to a position halfway between flexion and extension, always continuing the traction, but now directing it in a volar and ulnar direction. During this entire maneuvre, strong pressure by the thumb of the other hand forces the lower fragment into place, and reduction is complete. When the traction is relaxed, the fragments again lock in their new position, and in most cases there is very little tendency for the dislocation to recur.

Let it be understood that I am here discussing the reduction of the usual fracture, the one in which the lower fragment is not splintered, and in which the simple dorsal displacement is present; these cases constitute the large majority of all encountered. When we have marked comminution of the lower fragment with extensive involvement of the articular surface, great adduction of the hand, possibly fracture of the shaft of the ulna, or other serious complications, it then becomes a question of doing the best we can under the circumstances; the fragments must be manipulated into their proper positions as near as possible, after which attempts are made to mold them into shape. Even in such cases, with careful and painstaking aftertreatment, the results are often surprisingly good.

Complete reduction having been accomplished, proper immobilization to prevent a recurrence of the displacement while healing of the fracture is in progress next engages the attention. The method of immobilization is just as important as reduction; indeed, without underestimating the value of a careful approximation of the fragments, it should nevertheless be decidedly emphasized that the method, and particularly the position of fixation, is of greater importance as regards the extent of the disturbances existing after removal of the bandages. The old view that the hand, after replacement of the fragments, should be placed in a position of volar flexion and pronounced adduction, by which I mean ulnar deviation, is open to criticism from several angles. Any extreme position of a joint, if maintained for any length of time, is unphysiological, and this applies particularly to the wrist joint under the usual conditions of fracture of the lower end of the radius. With the wrist in strong volar flexion, the extensors of the fingers are strongly stretched, while the flexors are correspondingly relaxed; the overstretched extensors, as a result of pain produced in them, may spasmodically contract still more, giving rise to a

force tending again to displace the distal fragment dorsally and proximally. Disregarding the discomfort of the position, however, and assuming that any displacement is prevented by the retentive apparatus, a greater danger to the future functional usefulness of the hand and wrist still exists. This is the extreme likelihood of adhesions on the flexor aspect of the forearm and wrist. That this danger is a real one is obvious when we consider the injuries to structures other than the bone which are present at the time of fracture. Hemorrhage and exudate into tendon sheaths and joint, frequently more or less tearing and laceration of the joint capsule, injuries to articular cartilage, some or all of these associated conditions are always present to a greater or lesser degree; with the hand in a position of volar flexion, late or incomplete absorption of exudate, organization with scar formation, leading to contracture of tendon, muscle, or joint capsule, these cannot do otherwise than lead to marked disability. Massage and passive motion for a brief period each day cannot overcome the evil consequences of fixation in extreme volar flexion; some range of motion may be recovered, it is true, but full and effective extension, the only position in which a strong grip with the fingers can be exerted, will always be lacking, to some extent, in the great majority of cases.

The position of adduction likewise serves no particular purpose. It was formerly thought that there was a certain amount of lever action associated with this position, which might lead to some lengthening on the radial side. That this theory is practically without foundation may be readily seen when one reflects for a moment that the fulcrum of this lever could only be the styloid process of the ulna, and that this is very frequently broken off. Nothing is to be gained by dressing in adduction; on the contrary, frequently a typical deformity is produced.

All these objections and difficulties are met and overcome by the simple expedient of immobilizing the wrist in the natural position; that is, with the elbow flexed at a right angle, the forearm in a mid-position between pronation and supination, with the axis of the hand forming a prolongation of the axis of the arm, or with slight dorsal flexion at the wrist joint. Contrary to the old view, in such a position there is no tendency to displacement of the fragments. No pressure is brought to bear on the articular cartilage, consequently the joint has no tendency to stiffen. All the opposing muscles and tendons of the region are in a state of equilibrium, consequently of physiological rest, thus doing away with the danger of future contracture. In this position only, with proper retentive apparatus, are the fingers capable of exercising at all times strong, active movements of flexion and extension, without which are bound to occur muscle atrophies and trophic disturbances, with stiffening of the interphalangeal joints. Last but not least, from the patient's viewpoint, a wrist thus immobilized is perfectly comfortable. These are not mere statements, but are facts of which anyone can convince himself. The old cramped uncomfortable position of volar flexion and adduction has no place in the modern treatment of fractures of the lower end of the radius, unless in the very exceptional cases with a marked tendency to displacement of the fragments which cannot be overcome in any other way. Even in such cases, after callus formation has begun, the natural position as described above can be adopted, with nothing but benefit to the ultimate result.

The method of dressing is also of importance. From what has been said, and in accordance with the modern view of the treatment of fractures about the wrist joint, it is very obvious that the old circular plaster of Paris cast has no place here. If one so desires, a molded plaster splint may be employed, especially if the position of fixation in slight dorsal flexion is chosen. There are also various manufactured splints obtainable which have their advantages and disadvantages. In my experience, light anterior and posterior wood splints fulfill every requirement for the average case. When properly applied, perfect fixation is obtained, they are easily removed for inspection, massage, and passive motion, and they are comfortable. The anterior splint extends from just below the elbow to a point just proximal to the distal heads of the metacarpals, the posterior one occupying a corresponding position on the back of the forearm and hand. Both should be cut out to allow for the thenar eminence and the head of the ulna, respectively. They should be well padded, and in addition, a small pad should be placed beneath the posterior splint at the site of fracture to prevent any recurrence of the displacement, and anteriorly, the space between the head of the radius and the splint should be filled in with one or two extra pads. The splints are applied with the hand and arm in a position halfway between pronation and supination; they are held in place by adhesive plaster strips, and a bandage put over all. Dressed in this way the arm should be perfectly comfortable; any marked pain, any throbbing, any blueness, coldness, or numbness of the fingers, is an indication that the dressing is too tight, and the condition should immediately be remedied.

From the very first day following application of the splints, patients are urged to practise frequent movements of the fingers, especially closing of the fist, and movements of the elbow. They readily do this, because pain is conspicuous by its absence. The shorter the period of immobilization, the shorter the healing period, and the better the result. As a result of this early and frequently repeated movement, stiffening of the fingers and atrophy of their muscles do not occur; likewise an excellent effect is produced in the region of the wrist joint by the action of the long finger muscles, flexors and extensors; the same is true of the short muscles of the palm.

In addition to these active movements, the importance of which should be impressed upon the patient, treatment by massage and passive motion is carried out. In most cases I have found that this can be begun by the third or fourth day, obviously employing the utmost gentleness. In the case of a fracture showing a marked tendency to displacement, the time for beginning these manipulations may have to be deferred somewhat; but the earlier they can be started without jeopardizing bony union, the better the ultimate result. This treatment is directed mainly toward preserving the function of the wrist joint; for the purpose of administering it, the dressing is completely removed, and in the beginning, very light massage and extremely slight passive motions are

instituted. At first the time should be short, and throughout absolutely no pain should be caused. This management is repeated daily if possible; if not, every other day, at each sitting lengthening the time of massage, and slightly increasing the amplitude of the passive motion, always being careful to avoid giving rise to pain.

In deciding the proper time to begin to discard permanently the retentive apparatus, the age of the patient, the extent of the displacement, and the solidity after reposition are factors which must be taken into consideration, and no hard and fast rule can be laid down. Generally, by the tenth day, the anterior splint may be discarded altogether, and by the fourteenth, the patient may begin gentle active movements, in addition to the passive ones. A few days later, or by the end of the third week, the posterior splint may be taken off, a firm supporting dressing of gauze and adhesive tape being applied about the wrist at the site of fracture. The sling, however, should be retained, and passive and active motions and massage continued. By the end of the fourth week union should be firm enough for the patient to begin to use the wrist for light tasks; however, this early activity should involve absolutely no strain on the newly formed bone at the site of the fracture. The average case should be able to return to light manual labor at the end of six weeks, but full, heavy work, involving marked strain and stress on the wrist, should not be attempted before the tenth or twelfth week.

If the treatment just outlined is conscientiously carried out, excellent results will be obtained. In the average case recovery will be complete, both from an anatomical and functional point of view, and in those occasional cases showing more severe injuries to the associated structures of the wrist joint, the result will be surprisingly good. And good results amply repay one for the time and attention to detail which is necessary to secure them.

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Cholecystitis During Pregnancy

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An investigation of the literature indicates that cholecystitis, as a recognized complication of pregnancy, is not an oft recorded condition. The discussion of this subject found in textbooks is meager, Williams merely mentioning it in a paragraph of about eighteen words. Going back as far as 1899 I find that less than forty cases, proved by operation or through finding calculi in the stool, are recorded. And yet, careful inquiry into the history of female patients suffering from cholecystitis and cholelithiasis, elicits the information that from 73.4 to ninety per cent. of them have borne children and that ninety per cent. of these can refer the beginning of their gallbladder symptoms to some particular pregnancy. Grube's figures are 73.4 per cent.; Peterson in his series finds seventy-five per cent.; MacLaren and Ritchie make it about eighty-five per cent.; while Schroeder's figures are ninety per cent. If then, in the life of woman, the time for development of cholecystitis and cholelithiasis is during the child bearing period, the question of the causal relationship of the pregnancy to the disease becomes an interesting one.

Nonneoplastic surgical diseases of the gallbladder and bile ducts excepting catarrhal inflammation resulting from chemical intoxication, such as acute phosphorus poisoning, have as their causative agent an infection by bacteria. In general, infections of the gallbladder may occur by three routes:

1. Direct continuation of the infection through the duodenal papilla or its lymphatics. The possibility of such direct extension is borne out by the presence of round worms in acutely inflamed gallbladders not containing stones. The old idea, still expressed in some textbooks of physiology, that human bile possesses antiseptic properties, is no longer tenable; indeed, bile may be used as a culture medium for certain organisms. Of course, organisms are rare in the duodenum and it is difficult to understand how they might ascend against a normal bile stream. The sphincteric action of the ampulla of Vater which exerts a pressure equivalent to 600 m.m. of water, and the flushing of the duct and ampulla by the intermittent passage of bile into the duodenum, both tend to prevent organisms from gaining entrance to the biliary tract from the duodenum. Bond, however, has shown experimentally that it is possible for bodies to enter the common duct from the duodenum and travel upward against the stream. Obstruction in the duct favors the growth of bacteria, by furnishing a favorable medium in stagnant bile. Charcot, Gombault, Naunyn and Sherrington independently found that the bile became infected shortly after ligature of the common duct.

2. Another source of infection is by way of the portal circulation. Adami demonstrated bacteria in the deeper layers of the intestine, in the portal circulation and in the liver, under normal conditions. He believed that the leucocytes carried bacteria to the lymphatic and portal vein radicles. The natural bactericidal powers of the liver cells are sufficient to destroy most of the organisms, but diminished destructive activity of the liver cells resulting from disease, fatigue and malnutrition makes it possible for some bacteria, escaping destruction, to be excreted with the bile. Lartigan tied the common duct in animals and then fed them bacteria. He recovered the organisms from the gallbladder in over fifty per cent of the animals, thus demonstrating the possibility of infection descending from the liver. Organisms of attenuated virulence entering the portal system and eliminated with the bile, may make their habitat in the gallbladder.

3. Certain organisms show a selective affinity for particular tissues. They reach them after dissemination through the blood stream from some focus. Streptococci and colon bacilli removed from acutely inflamed gallbladders and injected intravenously into animals produce cholecystitis. The influenza bacilli and the diplococci of pneumonia have been isolated from acutely inflamed gallbladders in patients suffering from influenza and pneumonia, respectively. Typhoid bacilli injected into the ear veins of a rabbit whose cystic duct had previously been ligated were recovered from the gallbladder.

Bearing these routes in mind, there are certain conditions present during pregnancy which favor the appearance and growth of bacteria in the gallbladder, thus becoming causal factors in the close relationship between pregnancy and cholecystitis. The increased size of the uterus during pregnancy produces increased intraabdominal pressure. The intestines are displaced upward and stasis of bile occurs as a result of mechanical derangement. This, of course, favors infection. Overeating, following the initial anorexia incident to the usual early month vomiting, is a common occurrence among parturient women, if for no other reason, because of the desire to insure a plentiful reserve for the growing fetus. This places an increased burden on the liver, and organisms can more readily escape into the bile.

As pregnancy progresses, metabolic activity is increased. The mother has the added burden of eliminating fetal products. Goldsborough and Ainley showed that through the entire period of gestation the normal obstetrical patient eliminated more slowly than the normal nonpregnant person, and that in the last months of pregnancy the power to eliminate fell far below that of the nonpregnant. The liver, taxed by the increased amount of waste products, becomes less potent as a bacterial filter and gallbladder infection is thus facilitated.

After the early months hemorrhoids are commonly noted. They are a direct result of stasis caused by the pressure of the uterus and offer an easy pathway for colon bacilli to enter the portal circulation. A somewhat similar, although not so marked, condition of stasis is found in the other tributaries of the portal vein, but the hemorrhoidal veins are the most prominent offenders.

There is an increase in the cholesterin of the bile during pregnancy. This is not due to stagnation of the bile, but to hyperactivity of the cells lining the gallbladder. Kramer grew colon bacilli in a sterilized mixture of alkaline peptone, bouillon and bile, and obtained a gradual precipitation of cholesterin and other components of gallstones. At the end of four weeks a closely packed semisolid mass resulted, and after six months' growth, the supernatant fluid was poured off leaving a well moulded mass resembling soft gallstones. He suggestd that the precipitation was due to the acid reaction of the bile resulting from the growth of the colon organism. The increased cholesterin content during pregnancy, once infection is introduced, favors the pathogenesis of gallstones.

Constipation is a frequent concomitant of pregnancy. Physical inactivity, because of selfconsciousness, actual cumbersomeness, and desire to protect the fetus, is the rule rather than the exception during parturition. This, with venous stasis in the intestines, pressure of the growing uterus and fetus, and the inefficient contractions of the attenuated accessory muscles of the abdominal wall, are responsible for the frequency of constipation during gestation. And constipation in turn explains the increased eliminative difficulties of the liver, and the increased possibilities for migration of organisms into the portal system.

These conditions developing during, and as a result of, pregnancy, all favor infection of the gallbladder. They are the connecting link between the etiological factors of cholecystitis and the pregnancy, and explain the relationship between a definite pregnancy and the history of the occurrence of the first attack in such a large percentage of cases.

That many cases of cholecystitis during pregnancy have not been reported is probably due to the fact that of those encountered comparatively few come to operation. Many attacks of pain in the upper abdomen with nausea, some temperature, and anorexia, that have been explained as indigestion because of mechanical conditions, have been gallbladder infections not recognized as such.

Routine inspection of the gallbladder during laparotomy for lesions elsewhere in Peterson's series of 542 cases revealed gallstones in 11.8 per cent. and a subsequent review of the case histories showed that while the preoperative diagnosis of cholelithiasis would have been warranted in a large percentage of cases, comparatively few had a story of sharp, acute attacks. We must recognize that mild inflammations of the gallbladder are possible, that these inflammations may result in the formation of stones, and that only at some later time, perhaps after years have elapsed, may an acute attack ensue, which would bring the case to operation where the diagnosis would be verified. This explains why so few cases come to operation during that term.

Analysis of the few cases that have come to operation shows that in nearly one third of them the onset of symptoms has been during the fifth month. At this time the uterus is approaching the level of the umbilicus, and crowding the intestines upward against the liver. The woman, conscious of her appearance, attempts to conceal the abdominal enlargement by the injudicious use of corsets and further crowds the intestines upwards.

Jaundice was a prominent symptom in approximately sixty per cent. of the cases and in fifty per cent. of these no calculi were found in the common ducts. Since so large a percentage of cholecystitis cases during pregnancy show jaundice without common duct obstruction, and Kehr states that jaundice was absent in one third of his common duct stone cases, it would follow that in cholecystitis during pregnancy jaundice may and does occur in a constitutional way and not only as a result of obstruction. This is a particularly interesting symptom, since jaundice has a tendency to initiate uterine contractions and is a menace to the fetus. The nearer to term the greater the possibility of exciting labor.

Pain in the upper right quadrant of the abdomen, radiating to the back and shoulder, is significant. Frequent urine examinations are necessary to rule out pyelitis which more often attacks the right kidney pelvis because of the dextroobliquity of the uterus. The demonstration of traces of bile decides

the diagnosis in obscure cases. Chills and fever suggest obstruction to the common duct, and when the common duct is obstructed jaundice is the invariable concomitant.

The surgical aspect of cholecystitis during pregnancy does not offer any special problems. Operations when the complications are not serious have but little tendency toward producing an abortion. It must be remembered that cholecystitis tends to subside and that long periods of freedom from symptoms are common, therefore operation should be advised only when the symptoms become frank, and especially if the attacks are frequent and recurring. The nearer to term, the greater the danger of premature labor from operative intervention, therefore, after the sixth month, whenever possible, operation should be postponed until viability.

Operative mortality does not materially differ from that in the nonpregnant state and is dependent upon the degree and extent of the inflammatory process and upon the complication of common duct involvement. The greater frequency of jaundice in the pregnant cases tends to increase the mortality rate. In Peterson's collected cases numbering twenty-three, the mortality rate was 13.04 per cent. (three deaths). It must be remembered that in these cases operation was performed because of urgent indications, therefore the results were very good. Graham reports five cases in which the patients were operated upon during pregnancy with one death. This patient was operated upon in the sixth month and a ruptured gallbladder found. All of these cases showed jaundice. Burke reports three cases with no deaths. Two of these patients were two months' pregnant and one four months, all jaundiced.

The operation of choice is not at all influenced by the pregnancy. The surgeon should be guided by the nature and extent of the inflammatory process and the complications present.

The following case report is presented because of its interest from the obstetrical, gynecological and surgical viewpoints:

Case.—Anna S., aged thirty-three, was admitted to the Brownsville and East New York Hospital October 1, 1922, complaining of pain in the right hypochondrium, vomiting and fever. Her family history was negative as regards this illness. Previous personal history—appetite was good, she was constipated, and vomited occasionally during attacks of pain. Menses began at fourteen, regular, twenty-three day type, four day habit, moderate amount, no pain, last period June 4, 1922. Obstetrical history—married nine years, had had four abortions spontaneously, all during the third month, the last one in December, 1921. With the present pregnancy, as soon as the first period of amenorrhea was noted, the patient consulted a physician who upon examination recognized a pregnancy in a movable retroverted uterus. He reposited the uterus, introduced a pessary to maintain the anteversion, and because of the previous miscarriages and the intense desire of the patient to go to term, kept her in bed up to the day of admission to the hospital.

Present history: Patient had been getting attacks of pain at intervals for the past year, the onset coming immediately after the last abortion. Pain was severe, and usually came after a heavy meal, radiating to the back and across the epigastrium. It was usually accompanied by vomiting. There was no blood in the vomitus, no jaundice, no clay colored stools. The patient complained of pain and tenderness in the right hypochondrium. On the morning of admission the patient had a severe attack of pain radiating to the back and right shoulder, accompanied by vomiting. Temperature 100, pulse 112, respiration 22. Physical examination revealed the following significant facts: Sclera slightly icteric; abdomen obese with palpable uterine tumor of a pregnancy of nearly five months' duration; tenderness and ragidity in the upper right quadrant with a focal point over the gallbladder region. Blood examination showed 18,400 white cells, 86 polymorphonuclears, 11 small and 3 large lymphocytes.

The diagnosis of cholecystitis with cholelithiasis was made and the following day the patient was operated upon. A distended, tense, thickwalled gallbladder almost buried in adhesions by the duodenum and omentum and containing soft stones was found. There were no stones in the ducts. Cholecystectomy and appendectomy were performed and the abdomen closed without drainage. The recovery was uneventful and the patient was discharged after sixteen days in the hospital. She did not return to bed. Subseqeuntly she was free from the preoperative symptoms. Two weeks before the date of her expected delivery she entered the hospital where signs of a toxemia developed with a blood pressure of 185 over 110, edema of the face and hands, visual disturbances, headache, albumin and casts in the urine. She was treated by the McPherson method, the toxemia was reduced and she was finally delivered by forceps of a living child.

One cannot help being struck by the findings in this case. A history of constipation, colic definitely related in time of onset to a specific pregnancy; relation of attacks to heavy meals; occurrence of last attack at the fifth month; presence of jaundice and the late toxemia. Speculation regarding the possible focus of infection in this particular instance would be idle, but so many of the conditions previously enumerated as being causally responsible for the relation of cholecystitis to pregnancy are found in this case that further summing up seems unnecessary.

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The Clinical Significance of Visualization of the Gallbladder with Tetraiodophenolphthalein of Sodium*

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On perusal of the rapidly increasing literature on the examination of the gallbladder by the new opaque method, one is impressed with the importance attached to this procedure. It is asserted that by this method ninety per cent. of cholecystic lesions, even in their incipiency, are easily detected; that nonopaque stones are recognizable by the negative shadows they produce in the opaque gallbladder area and that obstructive conditions in the biliary ducts are determined by the absence of opaque gallbladder shadows. According to some of these observers, even the degree of the excretory function of the liver may be surmised from the time required for the visualization of the gallbladder, since this dye is excreted chiefly through the liver.

In the face of such ostentatious assertions one would be inclined to think that, even if only part of these statements are found valuable, this method has fulfilled its expectations. Our experience thus far enables us to draw the following conclusions:

The gallbladder is not usually visualized in jaundice whether caused by stone, adhesions, cancer at the hilus of the liver, gallbladder or pancreas. In these obstructive conditions, therefore, the results of this method are of secondary importance, as the etiology still remains unascertained. Secondly, the early cases of cholecystitis and cholelithiasis associated with small nonopaque stones are not readily recognized, as no changes are noted in the characteristics of the normal gallbladder shadow and in its sequence. The alleged contrary claims in cholelithiasis are undoubtedly due to failure of the investigators to make a careful preliminary examination, by the ordinary röntgen method for the detection of opaque stones. Thirdly, the chief value of this method lies in the invariably absent gallbladder shadow in obstruction either at the sacculated base of the gallbladder, known as Hartman's pouch or in the cystic duct, by either stone, adhesions, cicatrix or primary growth. We also wish to stress the importance of a faintly outlined gallbladder shadow in many instances of well advanced cholecystitis or cholelithiasis, even if the cystic duct and gallbladder remain partly patent. Graham and his associates attribute this phenomenon to the lack of power of concentration of this dye by the diseased mucosa of the gallbladder. We believe, furthermore, bearing in mind that at least sixty to seventy per cent. of all cholecystic lesions are associated with pericholecystic adhesions, and from analogy of their inhibitory effects upon the pylorus, that these also exert similar effects upon the cystic duct through the circular fibres of its fibromuscular coat. Another possible factor influencing the patency of the lumen of the cystic duct is the peculiar arrangement of its mucosa consisting of loose, spirally situated papilla known as Heister's valves which, under normal conditions, probably have a regulating effect upon the flow of bile into and out of the gallbladder. In inflammatory processes of the gallbladder and biliary ducts, these often become edematous and thus further diminish the naturally narrow lumen of the cystic duct in an analogous manner, as the mucosa at the ampulla of Vater in catarrhal jaundice or cholangitis. The failure in nonjaundice cases, therefore, of obtaining a gallbladder shadow, after the intravenous or intraduodenal methods, but not after the oral (1) is pathognomonic evidence of pathology, obstructive in character, incident to the cystic duct or gallbladder or both. A faintly outlined gallbladder shadow is suggestive, but not conclusive of the existence of nonobstructive pathological conditions.

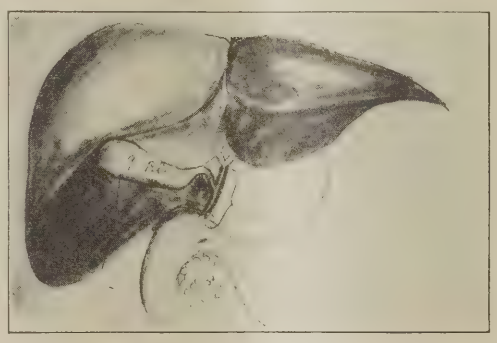

Fig. 1.—Cicatrix of common and cystic ducts causing persistent jaundice. Mr. S. W. Harlem Hospital. Exploratory laporotomy by Dr. L. Friedman. Gallbladder was not visualized after intravenous administration.

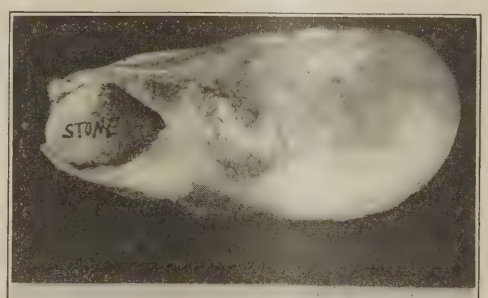

Fig. 3.—Obstruction at Hartmann's pouch. Mrs. R. S. Harlem Hospital. Service of Dr. J. F. Conners. Cholecystectomy by Dr. H. S. Pascal. Note enlarged and thickened gallbladder and large stone at the base of gallbladder which obstructed the lumen and prevented its visualization.

METHOD OF ADMINISTRATION

Of the three procedures at our disposal the oral method as we suggested (1) and also by Menees and Robinson (2) is the simplest but the least accurate. It appears that the dissolution of the keratin coated capsules containing the dye is determined by the reaction and amount of fluids in the intestinal tract. It was recently pointed out by Sossman, Whitaker and Edson (3) that out of 210 cases, seventy-nine showed none or an extremely faint shadow after this method. Nevertheless, owing to its extreme simplicity, it is advisable to begin with the oral method

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Fig. 2.—Pericholecystic adhesions causing cystic duct obstruction. Mrs. B. M. Referred by Dr. B. Stivelman. Cholecystectomy by Dr. William H. Luckett. The gallbladder was not visualized after oral and introduodenal administration. The stones were visualized by a preliminary examination.

first, and if the gallbladder is not visualized, the results must be checked up by either the intravenous or intraduodenal methods. We give with the aid of two glasses of water, twelve five gr. kerosal capsules about 6 or 7 p. m., six hours after the previous meal. This is followed two hours later by the evening meal. Food is then withheld until after the films of the gallbladder are taken at 9 a. m. and 1 p. m. the following day. A bread, cereal and potato lunch is then allowed and films are taken at 5 p. m. and, if necessary, on the following morning.

Since the advent of tetraiodophenolphthalein of sodium the intravenous method became more applicable for clinical purposes, the former being less toxic and is used in smaller doses than the brom salt previously used for this test. With the patient in the prone position and the extremity steadied by an assistant, we introduce, through one puncture, fifty c. c. of a sterile solution of double distilled water into which three gm. of tetraiodo salt was dissolved and filtered through double paper. We use, for the introduction, a fifty c. c. Janet-Frank fingerholed syringe provided with an eccentric tip as it permits manipulation with one hand while with the other the operator steadies the needle *in situ*. The free flow of blood through the needle is necessary before attaching the syringe and iodine and alcohol for asepsis are used. These precautions observed, no bad effects follow. The reaction, if any, is even less disturbing than after the oral method, slight dizziness being the most frequent complaint. Films of the gallbladder region are taken, six, twelve and twenty-four hours later.

In those in whom the gallbladder shadow was not obtained after the oral method or when the veins were not distinctly visible, the intraduodenal method may then be used to advantage. It is as reliable as the intravenous method and the gallbladder shadow follows the same sequence. The tube is introduced in the usual way, on the fasting stomach about 9 a. m. and when it is ascertained that it passed into the duodenum, five hundred c. c. of warm distilled water in which three gm. of the tetraiodo salt is dissolved, is then quickly introduced into the duodenum with an irrigating syringe of one hundred c. c. capacity, and the tube is immediately removed. If vomiting ensues, it is usually gastric contents admixed with bile. It may be advisable to precede

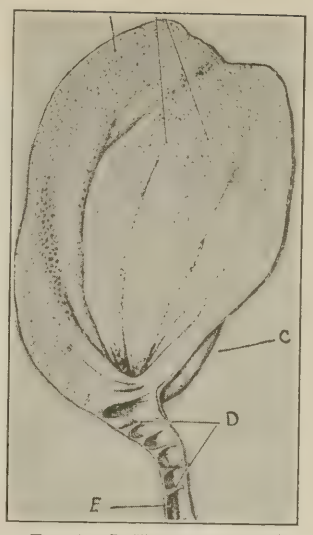

Fig. 6.—C. Hartmann's pouch; D, spiral valve (of Heister); E, cystic duct.

Fig. 5.—Edema of cystic duct and gangrene of gallbladder preventing the visualization of the gallbladder. Note huge gangrenous gallbladder. This was not palpable over the abdomen before the operation. (Miss S.)

Fig. 4.—Fibrosis and occlusion at the base of gallbladder. Miss R. M. Cholecystectomy by Dr. William H. Luckett. Note strawberry gallbladder and two small calculi. The gallbladder was not visualized after intraduodenal administration owing to occlusion at the base.

several hours before with a one half grain of codeine sulphate by mouth to prevent possible diarrhea or abdominal discomfort.

CONCLUSION

The tetraiodophenolphthalein test has merited a permanent place among our diagnostic procedures as through it the existence of obstruction in the cystic duct or at the base of the gallbladder is now recognized clinically.

Contrary to expectations, it does not always visualize nonopaque stones, neither are early cases of cholecystitis commonly recognized by this test.

Many normal gallbladders are not visualized after oral administration. The results, then, must be checked up by one of the other methods.

The intravenous method, through one puncture as described above, is not followed by general or local ill effects and gives most dependable results.

The experimental part of this work was developed at the Harlem Hospital. We wish to express our appreciation to Dr. P. Kleinskopf for his assistance and to the staff of the x ray department for their cooperation.

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162 WEST EIGHTY-SIXTH STREET.

New Clinical Aspects of the Steinach Operation

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(*Concluded from page* 518)

Frequently those middleaged patients came to me applying for the operation with various subjective complaints suggestive of premature senility. However, no objective symptoms of this condition could be found and no distinct decline in sex ability was stated. In such cases no sufficient indication existed and for the time being the operation was declined and the patient advised to take a vacation or some other form of treatment. Besides Case 69, which is an example for an insufficient indication at the time of the first examination, I would like to describe another case.

Construction engineer, aged forty-eight. Principal symptoms and complaints were: Patient was getting tired very easily, could not concentrate as well as he did and his memory was declining. Sexually he had never been extremely active, never had any venereal disease, had sufficient erections though not quite as good as in former years. Patient was a heavy smoker, had recently worked unusually hard. Examination was negative, blood pressure normal. Testicles rather small but of a firm consistency, prostate normal. No definite disturbances of thyroid or pituitary functions could be diagnosed.

The patient was not advised to undergo the operation for the time being, since the diagnosis of hypogonadism and premature senility was too doubtful. The patient was advised to discontinue smoking and take a prolonged vacation, since exhaustion from actual overwork, with possible chronic nicotine poisoning seemed to be the most probable diagnosis.

As contraindications, I have mentioned in former publications a seriously impaired cardiovascular apparatus and advanced senility with greatly atrophied testicles lacking spermatozoa. To this I might add in a more general way that I do not deem it advisable to operate on a man who suffers from any organic disease of such an advanced state that we would not want to subject his brokendown organism to an increased endocrine activity.

Since this definite general contraindication can be rather easily followed, it seems to me that it is more important to recognize an insufficient indication than an actual contraindication.

Summarizing on indication, I would like to repeat the following:

We have a sufficient indication for the Steinach operation if we believe that a condition is entirely or partly due to a congenital or acquired hypogonadism and if we can expect to produce a back pressure into the testicle by vasoligation.[1] If we are not certain of these two stipulations, the indication is insufficient and we would have to advise against the operation or let the patient know that the chance for a success is nil or correspondingly small.

An example of a case bordering on contraindication is the following:

The patient was a retired banker, aged seventy. Nine years ago he had a slight attack of cerebral hemorrhage, after which high blood pressure was discovered. He was frequently short of breath, easily fatigued, his memory had declined. He had lost weight and complained of a frequent feeling of fullness in his ears. He had an enlarged heart with a systolic blood pressure 220. He had a fairly normal right testicle. The condition of the left was doubtful on account of a pronounced varicocele on that side. His prostate was somewhat enlarged.

Considering the former apoplexy and the present physical condition of the patient, who generally appeared rather robust and fairly well nourished for his age, I have not expressed any great confidence in an

[1]In cases of sterility, it is somewhat doubtful but by no means impossible that such back pressure can be produced by vasoligation. If sterility is due to complete atrophy of testicles, the chance of vasoligation is almost nil, anyway considerably smaller than if sterility is due to an old infection that has caused an occlusion of the vas. Such an occlusion may not be complete and small amounts of secretion, although no spermatozoa, may pass, allowing back-pressure on ligation. Furthermore, we may ligate below the place of occlusion which means nearer to the testicle, and we may thus succeed in producing a renewed increase of pressure with possible favorable results. This would also explain the success of a repetition of vasoligation. (Vide Case 41).

immediate success of the operation and the patient has not insisted to have it done. He, like so many others, had probably read unwarrantably optimistic and exaggerated accounts and felt disappointed when he received conservative information. I have not absolutely advised against the operation in his case and would have consented only after some precautionary measures: First, I would have tried to reduce the extremely high blood pressure by conservative means, mainly rest in bed for several days, then operated on one side, keeping the patient in bed for about one week or longer following the operation, forbidden all mental and physical strain for several months and, possibly, if no sufficient benefit was derived from the unilateral ligation, would then have performed the operation on the other side. With such management, I do not believe that the operation could have done any harm.

With the exception of cases with a clear contraindication, or closely approaching one, I am convinced that the operation is never injurious. I can by no means agree, for instance, with Payr, Steindl, Schinz and Slotopolski, who lay so much stress on individual contraindications. It seems to me much more logical and much more in accordance with facts to give indications and contraindications in a general way according to common sense and our present conception of the histological and functional changes following vasoligation. For instance, to name mental diseases as contraindication, as Payr does, may at times be correct, namely, if the mental disease is due to or associated with hypergonadism. If the opposite, hypogonadism, exists, a good chance to benefit the patient may be lost by excluding the operation. (vide Case 94.) In not a single case that I have observed have I received the impression that the operation has ever done any harm and, indeed, the majority of clinicians who have studied the subject are in agreement as to the harmlessness of the procedure.

Laughlin and Clark have reported on vasoligation resorted to for eugenic reasons and have, in thousands of cases, never observed any injurious effects.

However, as I have done in a former publication, I would like to emphasize the fact that definite harm could come from the success of the operation, not from the operation itself. The old man, who has regained some of his former vitality, not only sexually, but in other capacities as well, is easily tempted to abuse his newly gained abilities and should most earnestly be warned not to change his mode of living for quite some time. He should enjoy his benefit moderately in work as well as in pleasure and if he will heed this warning no harm can befall him.

After having discussed indications, contraindications and possible dangers, let us briefly consider the results of the cases from various angles. Premature and physiological senility, although separately named in the single case histories, shall be considered together as far as the results are concerned.

Altogether seventy-five patients showing pronounced or beginning premature or physical senility have been operated on.

Of these seventy-five cases, fifty-seven could be followed up and have been observed sufficiently long (that means at least six months) to justify a conclusion. Of these fifty-seven cases, only four cases were decidedly negative, which means seven per cent. Nine cases were considered subjectively positive, nine cases doubtful and thirty-five cases have been more or less strongly but clearly positive. Considering the thirty-five positive and nine subjective positive cases together, as those that have derived a benefit from the operation, we would have to say that seventy-seven per cent. have had a beneficial result. Not all of these forty-four positive cases have noticed a sexual stimulation but only twenty-three, which means about fifty per cent. Twelve out of the forty-four positive cases were generally but not sexually benefited. In two of the negative and doubtful cases, however, the patients were improved as far as their sexual impotence was concerned.

Altogether twenty patients were operated upon bilaterally and fifty-five unilaterally. In forty-one of the unilateral cases a result could be determined and thirty-one of them were successful, which means seventy-six per cent. Of the bilateral cases fifteen could be followed up and thirteen of them were positive, which means eighty-seven per cent.

This speaks for the greater efficiency of the bilateral ligation, which at the same time usually produces prompter and stronger results also. Steinach has made similar observations and I am inclined to advise bilateral ligation in those cases where sterilization will be of no concern to the patient. This is true for most cases of actual senility. Unilateral ligations will be the method of choice where a slow socalled tonic action is desired or where—as in premature senility of the middleaged man—the procreative ability should be retained.

Outside of the cases where senility or hypogonadism was the indication, fifteen patients were operated upon for various other reasons, sometimes with the idea that a possible tonic effect on the endocrines may improve the patient's general health and indirectly ameliorate the symptoms.

The results obtained in these cases show that cancer cachexia was once temporarily checked, manic depressive insanity was definitely benefited in two cases, hypertension was once improved and twice the result remained in doubt. The rest of the cases were negative or doubtful.

In these cases, as well as in those of Table 1, the results cannot at all be compared with those cases where some form of senility has been the only or the principal indication.

In this paper I have abstained from giving an endocrine interpretation or classification of each patient, since a reliable endocrine study could have been made only in too few of the cases. A clinic would be of great service, where not only more complete observations could be made, but where also, as a matter of routine, complete blood counts, basal metabolism readings, and other data, could be taken in every case. The latter should be especially valuable in determining the influence of the improved gonadal activity on the thyroid function. I would also recommend a semen examination in every case. But in spite of the great shortcomings of the present article, of which I am well aware, the results unquestionably form quite a striking evidence of the definite clinical value of Steinach's discovery for the retardation of age.

I also believe that I have succeeded in dispelling the idea still being put forth in various publications, that the benefits are of only temporary nature. In

some cases of impotence they are, and naturally, in cancer also. But in senility (the principal indication), the results are decidedly lasting, more so than after any other form of treatment, or through autosuggestion. The latter has often been claimed in the Steinach operation as explaining the results, and it surely plays a part in a number of cases. However, to explain every good result by autosuggestion is preposterous.

The average time, after which the first improvements were noticed, was about six weeks. These were the improvements in general health, which lasted or gradually increased in such a way that sometimes the patient was better in the second year than he was in the first year after the operation (vide Case 57). Sexual stimulation in the form of spontaneous erections was frequently observed during the night following the operation. After a few days their intensity subsided and only gradually reappeared together with the beginning of the general improvement.

A number of patients have died: one from an accident, one from pneumonia, one, or possibly two, from cancer (in one, cancer had been the indication for the operation), and three others of unknown causes. However, no conclusions can be based on these deaths, Nothing has ever been asserted for the Steinach operation that these cases could disprove. No evidence exists to even suspect in any one of these cases that death has occurred propter hoc and not post hoc, and we must consider the fact that we are dealing almost exclusively with patients of a more or less advanced age, where death is *eo ipso* a greater possibility.

A few concluding remarks regarding the type of men who underwent the operation for the purpose of retarding their age:

Among seventy-five men there were nine physicians and dentists, six authors and writers, eleven other professional men, such as college professors, teachers and lawyers, four musicians, twenty-three businessmen, nine clerks and officials, six artisans and seven laborers and mechanics. This shows that the intelligent class predominates by far.

From numerous other quarters, as mentioned above, striking results similar to mine have been reported, and yet the Steinach operation is still being looked upon by the medical profession in general as a "fad" (if not worse), and as not deserving serious consideration. It is a regrettable fact that we have in our profession reactionaries, monarchists and fundamentalists, who are constantly impeding progress by assuming an overcritical attitude towards everything new. Dr. Sajous was right when he said in one of his recent lectures on endocrinology (not literally, but in sense) that we must often have and follow some intuition in the practice of medicine in order to make headway.[1]

No intuition is needed to realize the value of vasoligation, but an unbiased and practical, and not a narrow, one track, laboratory mind, in order to recognize and admit this value.

Naturally, we also have the other extreme. We have the faddist and overenthusiasts, who in honest conviction sometimes go beyond the limits of conservative criticism. And furthermore, there are the quacks and charlatans trying to grow rich through rejuvenation treatments. They naturally arouse suspicion and legitimate attacks, but unfortunately also unjust opposition against the method itself. The Steinach operation is no cureall, no wonder treatment, that will revolutionize medicine, but it has a definite value in balancing endocrine disturbances, relieving symptoms of age and prolonging efficiency—no more and no less.

For those who have had sufficient personal experience with the method (and Steinach's opponents hardly ever have), not the least doubt can exist that recognition will come to this discovery as it came to antisepsis and vaccination.

Within the limits of this article it is not possible to dwell upon the economic consequences that are bound to follow a general adoption of vasoligation. Likewise, the scope of this paper does not permit more than touching upon the aspect of an increased personal happiness accruing to the individual out of an improvement in his general state of health, with its possibilities for a renewed and widened sphere of activity. (Vide my cases 3, 8, 57, and others.)

CONCLUSIONS

The principal indication for the Steinach operation is premature or physiological old age.

In seventy-seven per cent. of the cases it has more or less definite, sometimes striking results in alleviating symptoms of senility, thus prolonging the active period of life.

These results can only be obtained if the correct technic is used and a definite indication insisted upon, and under these conditions the procedure is definitely harmless.

Where no reason exists to preserve the procreative ability of the patient, a bilateral operation is preferable.

The results are not only temporary, but can be pronounced as lasting several years.

Functional impotence is only an indication, a, when it is one of the symptoms of senility (then senility is the real indication); b, when endocrine gonadal deficiency can be assumed as a cause; c, as *ultima ratio,* after all other treatments have failed.

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[1] At a recent meeting of a society for the advancement of the study of endocrinology, thirteen papers were read dealing with this specialty and not one discussed the function of the sex glands. Is it possible that the function of the testes and ovaries was not considered important enough? Or, are there other reasons for this omission? Gonadal functions could hardly be discussed without mentioning the rejuvenation experiments by transplantation, by vasoligation and by x ray treatments. A discussion of this work would naturally have attracted general interest, possibly—*horribile dictu*—newspaper comments. Was that to be prevented? Was secrecy and mystery to be upheld in the practice of medicine like in the middle age?

Indeed, several speakers proudly announced the fact during the meeting that newspapermen had left the hall in disgust since they understood nothing of what was going on—*Sapienti sat.*

Practical Therapeutics

RADIUM, THE ALLEVIATOR

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As we look back along the path—often narrow, uncertain and tortuous—over which the science of medicine has traveled out of the mists which obscured its dawning up to the full noonday blaze of present accomplishment, we frequently smile at the conservatism—one is tempted to say "pigheaded obstinacy"—which in so many instances has barred the progress of what we now recognize as some of the greatest achievements of this science. The furious reaction against the teachings of Semmelweiss and Oliver Wendell Holmes as to the contagious nature of puerperal sepsis is a notable instance; the outcry concerning the commercialism of Morton, on account of which it was sought to prevent the use of surgical anesthesia, is another. Today we marvel that any physician who had it in his power to abolish the suffering of his patient under operation, could have withheld the agent of such relief because of the commercialism of the man who first brought that agent into general notice, but even yet, we are by no means wholly enfranchised from the shackles of conservatism of this kind, and there are still perfectly ethical and conscientious medical men who hesitate to ease the sufferings or perhaps actually prolong the life of a patient, by making use of an agent the value of which they personally regard as yet not fully proved.

At the outset we must, of course, admit that it is impossible to estimate the value of any new scientific principle, or a new application of an old one, until sufficient time has elapsed to permit generalization as to its merits. While it may not be necessary to await the verdict of posterity, it is nevertheless essential that we amass considerable data both for and against its efficacy before we can justly appreciate its actual worth. Such data must, in most instances, be collected by experiment, and this, even under the most favorable conditions, is a slow process. Therefore, the medical profession has heretofore been perfectly justified in holding back its unqualified approbation of the extended therapeutic use of such an innovation as radium. But today radium therapy is no longer in the experimental stage. Much as there still remains to be learned about it there is no doubt that at least some of its therapeutic properties are now well understood, and our knowledge of how to apply it to the best advantage has advanced far enough to be placed beyond the limit of guess work. New uses will undoubtedly be found for it, and better methods of application replace the ones now being employed, but what we have already gained is quite sufficient to advance radium therapy to a point where it can no longer be regarded as merely a medical fad.

There are a number of factors which have operated together to cast a certain disrepute upon radium therapy, and to create in the minds of cautious physicians—and likewise those of the less well informed laity—the impression that the actual facts do not justify the ofttimes extravagant statements which have been made in regard to radium cures. Many failures marked the beginnings of this therapy, perhaps more than the usual proportion which inevitably attends every essay into a wholly new and untried field, but mature consideration will frequently show that these failures were due to the use of preparations of the agent that were not properly standardized, were physically defective, or otherwise of inferior quality. Often, too, even when properly prepared radioactive substances were at hand, the quantity available was far too small to do the work required of it. It is now recognized that under certain conditions use of insufficient strength may induce conditions favorable to the progress of a malignant growth and, on the other hand, the destructive possibilities of too greatly concentrated or long continued radium doses, are so well known as to need no amplification here. It is evident that prejudice, thus quite justly incited, can only be overcome when radium therapy is controlled by accurate doses, and applied solely by those who have attained a high degree of technical skill, and the inevitable corollary to this is that initial special training must be followed by extended practical experience, for it is only those who have these qualifications who can be relied upon to administer the therapy to its highest usefulness. In careless or inexperienced hands, any such agent becomes potential of the greatest danger, and many disappointing or even disastrous results, which have served to cast discredit upon the therapy, should not be charged to the account of the radioactive agent, but to the inexperience of him who applied it.

Let him not be deceived by the apparent simplicity of the application! It is, in truth, simple to the skilled student of its properties, but woe betide those who believe its use presents no more difficulties than that of a new pattern of instrument, and proceed to apply it without proper preliminary training. The painful, often disastrous, and occasionally fatal results which ensue cast a shadow over the fair fame of radium therapy, and it is these unfortunate occurrences due to lack of skill and mature judgment and the prevalence of those "fools who rush in where angels fear to tread," which instill such fear into the minds of patients who might be benefited by the treatment that they are forever deprived of it. Should there not be everywhere established clinics where surgeons might go to study the practical application of radium, or to which they might send patients for treatment by those who were already fully competent, for if there is a remedy which—with or without operation—will abolish pain, prolong life, or at least somewhat stay the progress of the dread spectre, have we then the right to withhold this boon? Selfinterest and narrowness of view should not be permitted to stand in the way, nor the limited laboratory mind bar the gate to the comfort and greater happiness of the individual, and there should be a mighty campaign of education among members of the medical fraternity, if this is the only way to make receptive the minds of those surgeons who dread innovations and still persist in disregarding radium as a possible factor in the health salvation of their patients.

The surgeon everywhere should recognize that radium is not a rival to his especial branch of the healing art, but an auxiliary. As the late W. H. B. Aikins, of Toronto, once put it: "Its advocates do not claim that it supersedes surgery, but that it is a valuable adjunct to surgery in helping to prevent recurrence after operation, in rendering inoperable cases operable, and that it has proved itself to be one of the best palliatives we have in cases in which operation is impracticable, and in many of such cases has brought about apparent cure. This being so, it is obvious that in a large proportion of cases radium is used as a last resource, sometimes when the patients are in an almost moribund condition, and when all other measures have failed to give relief. This should, therefore, be taken into consideration in estimating the results. In such instances, even if we succeed only in alleviating the distressing symptoms and giving the patient a certain amount of comfort, the treatment will have justified itself, and radium will have accomplished what nothing else is capable of doing. The reputation of radium has too often suffered in the past, both at the hands of its friends and its enemies, exaggerated claims as to its efficacy being on the one hand based upon brilliant results in one or two apparently hopeless cases, while on the other hand it has been condemned altogether for isolated failures."

We have now reached that point where we have to ask ourselves whether, when a consensus of respectable opinion holds that radium can relieve the condition from which a given patient is suffering, we have any right to withhold that possibility of aid, even if our personal view may be partially or wholly skeptical. Has not every person suffering from conditions for which radium has proved of benefit an incalculable number of times, an inalienable right to such treatment, quite irrespective of whether he asks for it, or even knows of its existence? Does not this right exist, even in the presence of such ignorance, just as it is generally conceded that the unborn fetus has a right to life, even though it has no knowledge that it possesses life? And is not he who knowingly and without taking counsel of experts withholds this potential restorer of health and reliever of pain from the patient, quite as culpable as he who fails to make every effort to preserve the life of the unborn child, because in his unaided opinion there is little or no chance of its reaching term in a viable condition?

Many hindrances to the use of radium which existed until very recently have now been abolished. The available quantity of the element was not long ago so small that in many localities it was impossible to apply enough to obtain satisfactory results. In approximate figures France has nine and a half grams today, England possesses thirty grams, while here in the United States we have one hundred and twenty grams, distributed among private owners and hospitals. Neither can it any longer be argued that the cost of radium therapy is prohibitive, for though Italy and several other populous countries have no emanation plants, there is one in France, three in England, and at last accounts fully forty in this country. The perfection of the methods of collecting and handling radium emanation whereby the element may be retained in one spot while its emanation can be shipped safely and cheaply to a considerable distance, has so reduced the cost of radiotherapy that it is now within the reach of all, even those of moderate means, who, too poor to pay the fees applicable to the wealthy, but too well off and selfrespecting to derive any benefit from the amply equipped charity foundations which are freely open to the very indigent, are all too often shut out from the benefits of lifesaving measures which are always open to the two extremes of the social scale.

While the curative properties of radium are now established beyond all dispute, it is as a palliative that it still finds its greatest usefulness, and it seems on the whole rather strange that more attention is not paid—at least in literature—to this particular aspect of its application. Its ability to relieve hopeless conditions of the female breast and pelvis has found no counterpart in the entire history of medical practice. When Madame Curie began those studies, the results of which were to rewrite the whole story of cancer therapy, the sole measure of relief meted out to those unfortunates was the administration of narcotics in continuously larger doses. This only partially relieved the everincreasing suffering, and did nothing whatever to check the frequent hemorrhages or the evil smelling discharges from the brokendown cancerous tissue, which toward the last make the care of such a patient an almost unendurable task, rendering her obnoxious alike to herself and all about her.

Radium does away with all these distressing terminal phenomena; pain is greatly lessened or altogether ceases; hemorrhage is controlled; and the foul discharge abates and loses its disgusting odor. Often there is such marked relief of all symptoms that the patient will believe herself cured. No conscientious surgeon will encourage a patient or her family to be unduly hopeful, but there are on record numerous cases where growths which seemed almost at the utmost limit, have been so retarded that life has been indefinitely prolonged. In my own practice I have a patient who has been accustomed to take hunting trips with her husband. After a diagnosis of breast tumor which left no doubt of its malignancy and probable extension, radium applications were made at two month intervals, and under a heavy bombardment of well screened gamma rays the threatening infiltrating masses gradually disappeared, so that the patient was able to accompany her husband on what they believed to be their last trip together. The treatment was extended over a year and a half, there is still no sign of recurrence and a weight gain of sixteen pounds in the past six months. Two more "final trips" have been taken, and as yet the Grim Reaper is being held at bay. Thus may radium be truly termed the alleviator!

Of radium as an adjunct to surgery in the treatment of mammary carcinoma, much has been said and written, yet I feel that half the tale is still to be told. Experiments conducted at the Middlesex Hospital (England) have shown that "radium is able, at any rate in some cases, to arrest the advance of microscopic cells growing at the edge of the permeated lymphatics which form the advance guard of a carcinoma. The practical difficulties of giving an adequate dose of radium to every portion of an extensive growth are, however, enormous, and at present, insuperable, even when the growth starts

in an accessible situation. This depends upon the fact that the circle of permeation around a malignant growth may be very extensive." Yet, as has been impressively pointed out by Pfahler, in this country, "one of the advantages of radiation over surgery is that it can be used more extensively and can be used especially to surround the growth." Moreover, radiation treatment, as being practically painless, has a greater appeal to the patient—especially if it be a woman—than has surgery, and many who absolutely refuse operation at the outset may be persuaded to submit to it after a preliminary course of radiation.

Much, of course, remains to be determined regarding the best methods of applying this preoperative radiation. In a recent report of the British Medical Research Council attention is called to the wide variation in the practice of the different hospitals the work of which is summarized. "Whereas from the surgical point of view, it may be of the first importance that the most probable tracks along which the disease extends be given heavy doses of radiation, much depends from the radiologist's point of view upon how certainly these are known and how large a dose of radiation may be administered with safety to the several regions of the body which are being invaded." The report nevertheless concludes: "The encouraging feature of the data submitted is the endeavor which is being made to utilize radium fully as an aid to the surgical measures in cancer of the breast." One of our own radiologists, R. H. Boggs, once remarked that "Radiation for the treatment of cancer of the breast has been so changed by imbedding radium that where superficial skin effects were formerly produced, now cancerous tissue deeper than that which can be removed by the knife can be destroyed without opening the lymphatic chains." This author is of the opinion that if surgeons would uniformly give anteoperative treatment by imbedding radium, and remove less tissue, "thereby leaving the sclerosed lymphatic tissue as a barrier against cancer cells, the end results would be better, at least in the borderline cases; that is, there would be fewer recurrences, and if a recurrence did take place it would be considerably less than when the operation precedes radiation."

Of the value of postoperative radiotherapy in breast cancer and in recurrences there is now but little question; but lest there be some who still hesitate to give this added safeguard against speedy and terrible death to the patients who come to them seeking relief at their hands, I would add my plea to those which have already been uttered. Boggs makes the statement, backed by an impressive array of authorities, that when the axillary nodes are palpable there are very few cures by surgery alone without radiation, and when they are not palpable, but are found to contain cancer cells microscopically, only about twenty per cent. of the cases are cured at the end of five years. Greenough asserts that when the axillary glands are palpable twelve per cent. can be cured by operation, and Finsterer places the percentage at 4.3. Ewing believes the last figure represents the average of surgical success, which means that a woman who has a well established cancer of the breast with palpable axillary nodes, has one chance in twenty-five of being cured by operation. My own faith in the ability of radium to cope with postoperative recurrence is so great that I never hesitate to leave enough skin to cover the wound satisfactorily, even if it is evidently malignant, for as soon as the wound is healed, a bombardment of 2,000 or 3,000 mgr. hours of properly screened radium to the skin will quickly control the surface condition.

As an illustration of the value of radium as an adjunct to surgery I would cite a single case of my own, fairly typical of many such which have appeared. At the time of operation but one thought was entertained, namely, the possibility of postponing for a few months an inevitably fatal outcome, and during that period to reduce to a minimum the destructive process in the skin covering the left mammary region.

Case.—A woman, fifty-three years of age, the mother of seven children, had for twelve months before coming under my care noticed a mass in the left breast which increased in size steadily, and now showed involvement of the pectoral, axillary, supraclavicular and infraclavicular nodes. In the triangle indicated by the clavicle and outer border of the pectoralis major muscle and a line drawn perpendicularly through a point one inch to the left of the nipple, there were malignant indurations of the skin numbering eleven in all. One supraclavicular gland was the size of a large olive, and there were several smaller ones. At operation the axillary involvement was found to be so extensive that it was with difficulty that the nodes were detached from the axillary vein. Both pectoral muscles were also involved.

Following operation a seventy-two hour radium treatment was given, using one hundred mgs. of radium, screened with two mm. of brass, applied to the whole axillary region through a three quarter inch para rubber drainage tube introduced well into the apex of the axilla. The position of the radium was changed every twelve hours. Eight days later, into that portion of the anterior chest wall enclosed in the triangle above described one hundred and twenty seeds of radium emanation, small capillary tubes averaging a content of one third of a millicurie of radium emanation each, were implanted; and two weeks later, into the surrounding portion there was a second implantation of eighty seeds of the same strength. From February until August there were monthly treatments through both anterior and posterior axillary folds, to the supraclavicular and infraclavicular regions and along the anterior mediastinum, of three thousand milligram hours each. Up to the present there has been no return of the growth.

Concerning the radium treatment of those forms of carcinoma of the breast both primary and recurrent, where the surgeon can give no aid, this agent now holds out a hope of prolonged life and in not a few cases of clinical cure which has endured far beyond the arbitrarily established five year limit. At the Memorial Hospital in New York they regard as the best method of handling such cases external radiation by x rays, with a fifteen inch exposure, ten inch spark gap and twelve inch focal distance, with forty-four mm. aluminum filtration and four ma. of current. In conjunction with this they employ an implantation of bare radium emanation tubes into the growth, giving a complete dose at the first sitting. In tumors which are primarily inoperable especially, the use of the tiny capillary tubes of radium emana-

tion has proved most satisfactory. There is now on the market an improved implanter for these little seeds, which makes possible an even distribution of minute quantities of radium throughout the growth.

As an illustration, I will cite the apparently hopeless case of an Italian woman, for whom fifteen years ago nothing could have been done. Emanation seeds were implanted, an initial distribution of one hundred and twenty seeds in the chest wall, followed by a second distribution of eighty seeds in chest wall and axillary region. This was supplemented by three thousand hour treatments once a month for seven months, with the radium so applied that the mediastinal and axillary glands received most of the radiation. At the end of a few months there was no noticeable improvement in the condition, but the surgeon being absent for ten months, at the end of that time the patient again came to his office, looking the picture of health. She was entirely free from pain, and when the chest wall was examined the condition was ideal, there was not a sign of recurrence. Scattered throughout the whole area where the radium emanation treatment had been applied one could detect the round, shotlike nodules which collect about the little seeds.

Let us consider for a moment the effect of radium upon malignant tissue and its metastatic deposits. These considerations have received very extended attention from pathologists of high standing, notably Ewing and Schmitz in our own country, and Lazarus-Barlow in England. The last named recently made public the results of his examination of certain spheroidal celled carcinomata of the breast, which had been exposed to radium radiation and later amputated. One specimen received three radium applications before its operative removal.

"The effects of one exposure lasting five to six hours to the gamma radiations from five gm. of radium bromide are partly general and partly cellular. As general effects, it is noted that cellularity is somewhat considerable, that degenerated masses are rare, that millinucleated cells are very few, that fibrous tissue is present in considerable amount, is collagenic and a little fibrillar, that it shows no proliferation of connective tissue cells, that Indian file arrangement is very slight, and that small cell infiltration in advance of the growth is slight to moderate.

"In respect of the cells, it appears that the cells are large, that the quantity of cytoplasm is slightly hyaline or slightly granular, rarely vacuolated, but that frequently cytoplasm has disappeared entirely, leaving the nuclei naked. The nuclei are slightly variable in shape, more often contracted than swollen, and rarely are vesicular. Staining is faint or deep, but almost always is diffuse and rarely is irregular. Nucleoli are very uncommon; degenerated forms more advanced than ghosts are rare, but ghosts are fairly common. Mitosis is extremely uncommon."

Where there had been two radium exposures more cytoplasm are present in the cells, and it was more frequently hyaline and less frequently granular. The nuclei threads are more variable in shape, more concentrated and swollen forms are present, as well as many more vesicular forms. In general, it was noted that there was increased tendency toward the occurrence of localized degeneration of neoplastic cell masses, and that the connective tissue fibres permeating the growth become collageous in greater or less extent.

Ewing tells us that "ideal radium therapy seems to require a nice adjustment of relations between destructive effect on tumor cells and stimulation of stroma cells. Opinions differ as to whether the action is mainly on the nucleus or on the cytoplasm, but it undoubtedly affects both, and probably in variable degree." He has concluded from his observations that radiation is capable of restraining the growth of tumor cells without causing either autolysis or necrosis, and of transforming functionless, lawless cell growth into more organized and functionating tissues. He has also become convinced that the clinical results which we observe after radiotherapy are not usually due to the lethal effects of the rays, but are generally brought about indirectly, and mainly by interference with the circulation. Tumors thus radiated "exhibit isolated foci of necrotic cells, marked hydropic degeneration of collagen fibrils, but usually some areas in which the cells appear well nourished and viable. After several weeks sclerosis of injured bloodvessels appears, which shuts off the circulation. The tumor tissue then undergoes progressive fibrosis, but often groups of tumor cells persist in the scar tissue, from which metastases later take their rise." On account of the extremely variable anatomical and clinical character of mammary carcinoma, the difficulty of diagnosis, the danger of disseminating the disease by surgical manipulation, the extent of the radical operation and the frequency of recurrence, Ewing believes that the combination of x ray and radium therapy is destined to very generally replace the surgery of mammary cancer. He adds, "this problem must be worked out on selected cases over a long period and the answer seems likely to come from European sources before we in America are prepared to accept it."

These are impressive sentiments coming from perhaps our foremost authority upon neoplastic diseases. Though few surgeons are as yet willing to feel that their ability to cope with mammary cancer will no longer be called into play, I feel convinced that a wider recognition of the great field of usefulness which radiation has in connection with surgery, and its immense usefulness in those cases for which surgery can do nothing, will do much to advance us on the way to the mastery of this most frightful source of mortality among the women of our country. Let us not be behind Europe in making the greatest possible use, in whatever form it can best serve us, of radium, the alleviator.

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Preventive Orthopedics*

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New York

When Andry defined orthopedics as the art of preventing and correcting deformities in children, he struck the keynote of the intelligent treatment not only in deformities but in everything which pertains to health. In almost every ailment nature hangs out danger signals notifying us to stop, look, and listen, before trouble comes, and if we heed these warnings a great many of the maladies which affect us can be prevented, and in no branch of medical science is this truer than in orthopedic surgery. The majority of the patients who come to the orthopedic surgeon ask to be relieved of deformities which he is powerless to do more than to correct partially, but which would never have taken place had the first onset of disease been noted and treatment instituted to prevent the occurrence of the deformity.

Rickets is one of the most prevalent causes of deformity. Knock knees, bowlegs, anterior curved shins, coxa vara, and lateral curvature of the spine, are among the more prominent malformations caused by rickets, but it is exceptional for these conditions to be present at birth, and intelligent observation of the baby will usually show before the occurrence of the deformity, that rickets is present. Little beads of perspiration around the roots of the hair bordering the forehead, especially when the child is sleeping, at times so profuse as to make a wet place on the pillow where the child's head rests, should arouse suspicion. Failure of the fontanelle to close at the normal time, especially if the head is abnormally large in circumference, should always put one on guard, and if the child is slow in crawling, and prefers to sit on the ground and bump itself about, progressing backwards instead of forwards, look it over carefully and see whether the epiphyses at the wrists and ankles are bulging, if the costosternal articulations are forming a rachitic rosary, and investigate the child's diet and the amount of fresh air and sunshine it is receiving, and be careful it does not assume attitudes which may tend to produce bony deformities. If the child sits on its mother's lap with its legs projecting, the weight of its feet may cause anterior curved shins, or when it sits on a chair in a similar position the same deformity may occur (Fig. 1). If the child sits on the floor with its legs crossed like a tailor, bowlegs may be produced, while if it sits with its knees together and its feet stretched out at each side, knock knee is apt to result (Fig. 2); if the child is carried constantly on one arm by its mother, supporting itself with its hands around the mother's neck, a scoliosis is frequently to be noticed (Fig. 3). Attention to the general nutrition of the child and the evidence of improper posture may save a deformity, which, left to pursue its own way may become irremediable, but which if noticed before it has made marked progress can be easily corrected.

As mothers usually carry their children on their left arm right dorsal scoliosis is much more common than left dorsal, and in a number of cases of left dorsal scoliosis I have found on inquiry that the mothers had been accustomed to carry their babies on their right arm.

Sometimes the stiff ankle shoes which are used to hold the feet of rachitic children cause a sharp bend in the leg just at the top of the shoe unless measures are taken to correct the rickets (Fig. 4).

Improper posture is a prevalent cause of orthopedic deformities, and just as it is necessary to secure a good foundation before building a skyscraper, it is necessary to secure a good foundation if we wish to secure correct posture. Fashion makes most of us stand and walk with our toes turned out in a position which does not lend itself to security, and which, persisted in, in growing children with soft cartilaginous bones and easily stretched ligaments and muscles, may lead to structural changes in the shape of the bones of the tarsus which will eventually cause painful and weak flatfeet. Children are frequently brought to the family physician because the mother notices the child toes in, and asks him to correct this deformity. Careful examination will frequently show that the child is rachitic and that its intoeing is the results of its instinct which causes it to place its feet in a position to relieve the arch of strain and make itself comfortable, and no effort should be made to force these children by specially constructed shoes to turn their toes out,

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FIG. 1.—Position on mother's lap causing anteroposterior curve of lower end of tibia and fibula.

FIG. 2.—A position producing bowlegs.

FIG. 3.—Incipient rotary lateral curvature of spine resulting from manner in which child is held.

FIG. 4.—Rickets, bowlegs. Curve in lower third of shin where support of average corset shoe ceases.

but efforts should be made instead, to correct their general malnutrition and render their tissues firm enough to resist the strain. It not infrequently happens that these children when sent to dancing school are held up to ridicule by the dancing teacher and pointed out to the other children in the class as examples of clumsiness, and compelled to walk with their toes turned out, the result of which is to break down their arch, give them painful and feeble feet and cause them once more to seek medical advice. A great many adults do not realize that they are standing with their feet turned too far out, and should be taught to hold them in correct position before they acquire chronic tarsal sprain, which may give them very great disability (Figs. 5 and 6).

In these cases of outward deviation of the foot the Achilles tendon should be examined to see if it is too short, as, if it is, it will be found impossible to correct the valgus until the origin and insertion of the gastrocnemius muscle have been approximated by flexing the knee. With the knee flexed it will be possible to lower the tip of the os calcis and raise the front part of the foot by motion through the ankle joint, with the knee straight the os calcis cannot descend and the front part of the foot is raised by motion in the mediotarsal joint and a flatfoot will result.

FAULTY CARRIAGE

Patients who come to you for examination as to their physical condition should be stripped for examination as a great many mistakes in diagnosis are made as the result of failure to observe conditions which are plainly evident to the trained eye. Many children, and many adults also, stand with the back too much swayed, the abdomen protruding, and the chest caved in, the neck being poked too much forward. The majority of people do not know how to stand, or realize the difference in their general wellbeing which will accompany voluntary muscular effort to hold the body in a correct position during their ordinary occupations. Many gastrointestinal complaints are alleged by the internist to be due to visceroptosis, which is said to be the price we pay for walking on our feet instead of on all fours, but if we stand on our feet as we should, and flatten our backs as we should, throw forward the chest and pull back the nape of the neck, the ptosis of the viscera will be corrected. In a vast majority of instances people must be told that they hold themselves upright with their belly muscles as well as their back muscles, and instructed how to hold themselves in a good position.

In a great many of our schools the children are taught very faulty carriage in the effort to correct round shoulders. Instead of being taught to draw back the nape of the neck and lift up the ribs while the shoulders droop and the scapulæ slide forward, they are taught to pull the scapulæ together towards the spine and hunch their shoulders as near their ears as possible. Exercising once or twice a week in the doctor's office or in the gymnasium will not give correct carriage, and it is very essential that the interest of the patient should be aroused, and after he has been shown in the looking glass the difference between correct and incorrect posture, he should be encouraged once an hour throughout the day to hold the body so that he feels the muscles

FIG. 5.—Flatfoot and round shoulders, due to lack of muscular tone as seen in the adult. This shows the chronic tarsal sprain. The feet are turned too far out.

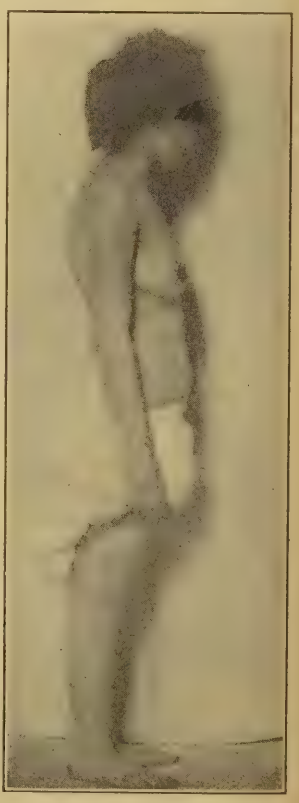

FIG. 6.—Flatfoot and round shoulders, due to lack of muscular tone.

FIG. 7.—Left hip joint disease. Note apparent lateral curvature of the spine.

FIG. 9.—Dorsolumbar Pott's disease in early stage.

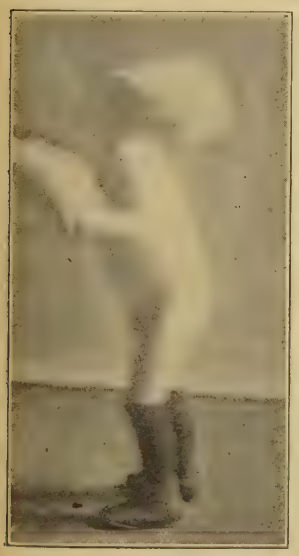

FIG. 10.—Dorsolumbar spondylitis.

making the same tension which he has seen with his eyes in the looking glass gives him a straight position, and if these exercises are carried out once an hour while he counts a hundred to himself, enormous good can be accomplished.

I am in the habit of telling such patients that if they will devote as much time to getting their backs straight as Paderewski did to exercising his fingers, they will achieve their object, but if they simply stand straight at the doctor's and at the gymnasium, and slouch the rest of the time, that nothing will happen.

IMPORTANT SYMPTOMS

Slight deviation from the normal in growing children may be the precursor of hideous deformity, and it is of the utmost importance that these slight postural defects should not be treated as trifling affairs but corrected before harm is done.

Inequalities in length of the legs should be noted. and if of any great degree, corrected by arranging the shoe so that the pelvis is straight, as otherwise bad lateral curvature may develop. Some of the worst cases of lateral curvature that I have seen have had such trifling deformity when the parent first suspected that something was wrong, that they have been told there was no need of doing anything for the child. Inquiry should be made as to the occurrence of what are often called growing pains, as these frequently mean inflammation of the joints. If a child complains of stomachache he may have a beginning spinal tuberculosis, and the mode of walking should be carefully noted to see if there is a careful, tender tread, if there is any lack of flexibility of the spine in bending or twisting, and if the mother says it gets tired when it walks, and wants to drag on her hand (Figs. 9, 10 and 11).

If it complains of pain in its foot or in the knee, and yet the foot and the knee appear to be normal, examine the hip with great care and see if these pains are not the reflex signal of inflammation in the hip joint transmitted to the knee or toe by the means of the obturator or sciatic nerve. As we get further up the child's body in noting its posture, observe the position of the head, see whether it cants its head to one side, and find out whether the head is held in this position on account of some ocular imperfection or disturbance of hearing, or whether there is a history of a previous sore throat, tonsillitis, or middle ear inflammation, which may have caused a metastasis in the upper cervical spine which may give rise to occipital headache, or pain in rotating the neck.

INSPECTION OF TEETH

Inspection of the teeth of these children is of great importance and may throw light on their malnutrition and general lack of resistance. There may be typical Hutchinson teeth, but in a good many cases of congenital syphilis we see irregularities of the teeth, gaps between the teeth, and disturbance in the enamel, although the typical crescentic peg shaped teeth of Hutchinson are absent. The Wassermann reaction in these children is often negative, while a positive reaction is obtained on examining the blood of the parents, and this should always be made (Fig. 12).

1014 MADISON AVENUE.

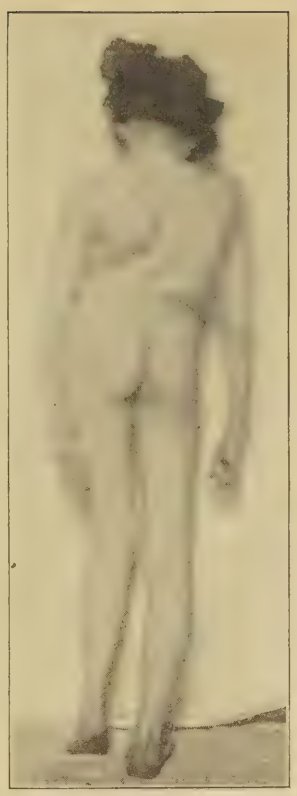

FIG. 8.—Same as in Fig. 7, ten years after; untreated.

FIG. 11.—Characteristic position in spondylitis.

FIG. 12.—Syphilitic cervical spondylitis. Note the teeth.

The Ear, Nose, and Throat

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The limits of this paper make it necessary to presuppose that the practitioner is familiar with instruments and methods of examination and with normal appearances. It might be well, however, to call attention to some of the more important structural and pathological changes that indicate the possibility of future systemic affection. We must also stress the importance of obtaining an accurate history of the case.

In examining an ear, we first inspect the canal wall for evidences of infection such as acute cellulitis or furunculosis and then carefully observe the drum membrane. Is the drum normal in color? Is it retracted or bulging? Is it intact or perforated? If perforated, are there any signs of a discharge, or granulations, or of polyps? In suppurative cases the history of the discharge must be taken into consideration. How long has it existed? Is it continuous or intermittent? What is its bacteriology? Functional tests are not absolutely necessary as they have but an indirect bearing upon our subject.

In examining the nose, find out whether your patient has a history of mouth breathing; what obstructions there are in the nose; whether there is a deviation of the septum; whether there are hypertrophies of the turbinates; in short, whether there is anything that would obstruct the channel of respiration. Also note whether there is any discharge or scabbing present, and if there are any erosions or ulcerations of the septum or ecchymotic spots on the mucous membranes of the turbinates.

Remember that the mucous membrane lining the nose continues into the rhinopharynx and larynx, and that all infections or catarrhal inflammations may be extended through the continuity of that membrane.

In examining the mouth, take particular notice of the color of the mucous membrane. Extreme pallor of the membrane of the roof of the mouth, of the pharynx, or of the larynx is often indicative of incipient pulmonary tuberculosis. The presence of erosions or ulcerations may indicate tuberculosis or syphilis.

Inspect the condition of the tonsils. Are they hypertrophied? Are they the seat of any inflammation? Are they cryptic? Draw aside the anterior pillar and press the tonsil slightly to discover if there is any secretion and, if possible, have a smear and culture made.

In examining the larynx pay particular attention to the color of the cords and their movements of abduction, adduction, and tension. Observe carefully whether there is any infiltration of the membrane, ulcerations, or neoplasms. Here again infiltration or ulceration may be indicative of tuberculosis and syphilis.

Of all the subdivisions of the general system of medicine, no one is more closely allied to the others collectively and individually than that of rhinology, laryngology, and otology. A doctor making a periodical health examination must consider the condition of the nose, throat and ear.

Many conditions and symptoms observed in this tract are but local manifestations of general systemic disturbances, and may be of great significant interest in the diagnosis and prognosis of disease. They may cause disturbances elsewhere in the body. They may be prodromal or indications of an incipient or a latent stage of disease; or may complicate an active disease. A great number of symptoms of reflex origin may arise from abnormalities in, or perversion of, the functions of the nose and throat.

Let us briefly consider those local conditions which should influence us in the expression of an opinion of the health of those who may present themselves for examination, and then dwell for a moment or two upon some of the more significant symptoms relating to systemic conditions.

FOCAL INFECTIONS

The nose and throat are well known sites of focal infections which are likely to lead to socalled rheumatism, heart disease, kidney infections, and other crippling conditions. The discovery of sinus infections, cryptic tonsils, or other inflammatory conditions of the nose or the throat is an indication for a careful inquiry into the client's history of rheumatism or other general disturbance remote from the nose and throat. On the other hand, the existence of rheumatism, endocarditis, or other chronic condition of the joints or heart is a plain indication for a searching examination of the nasopharyngeal region.

Serious focal infections may exist without giving discomforting symptoms which drive the health client to his physician for relief. One of the greatest benefits of a periodical health examination is that the physician often discovers serious conditions which have not produced discomfort in the place of their origin.

It is also true that annoying symptoms whose site seem to be the nose and throat are really caused by disturbances elsewhere in the body. We will consider the interpretation of the three common symptoms: Cough, hoarseness, and nose bleed.

Cough.—The most frequently occurring symptom common to both general medicine and the specialty under discussion is cough,—and no symptom is more deceiving as to its origin. Cough usually arises from causes in the chest, trachea, larynx, or nose, but it may also be due to systemic disease or remote local irritations. A cough is caused by stimulation of the sensory fibres of the vagus distributed to the larynx and trachea. This free distribution of the nerves, together with the intimate connection of the vagus, the glossopharyngeal, and the cervical plexus of the sympathetic, indicates why excitation of pneumogastric fibres in any of its terminal branches may give rise to reflexes and explains the rationale of reflex cough. As an illustration of this, the night cough of children, almost invariably due to nasal or postnasal irritation, may be cited.

The sensory nerves of the nose are derived from the trifacial, the external portion being supplied from the first division, through the anterior ethmoid, and the posterior portion from the nasal branches of the second division, and a branch of the dental from the third. Irritation of the terminal filaments causes the impulse to be conveyed toward the centre and thence toward the periphery by the vagus.

VARIETIES OF COUGH

The reflex cough of nasal origin may be caused by any contact with the mucous membranes, particularly the hypersensitive spot in the nasal chamber near the anterior tip of the middle turbinate. Nasal vasomotor disturbances also excite cough.

Rhinorrhea and acute antral sinusitis may produce a slow, hacking, painfully persistent cough from the constant postnasal dripping.

In children, a reflex cough from nasal lesions is rarely present, but is often due to the presence of adenoids or follicular nodes on the posterior pharyngeal wall.

Nasal reflex cough is confined almost exclusively to persons of a nervous disposition. The cough of nasal or postnasal obstruction is necessarily aggravated by the consequent mouthbreathing. When postnasal it is of a hacking, irritating variety, as though attempting to get relief from accumulated mucus.

An elongated or acutely inflamed uvula produces a persistent, dry tickling cough, augmented in the reclining position.

The lingual tonsil causes an intermittent short hack, as though clearing the throat, which is due to accumulation of secretions in the glossal epiglotidian fossa and irritation of the epiglottis by contact.

Pharyngeal cough is usually occasioned by the presence of secretions and by irritation of the peripheral nerve filaments in acute and chronic inflammations, and by ulcerations,—the latter being usually specific or tuberculous. Paralysis of the pharyngeal muscles may cause cough from food irritation.

Hypertrophied tonsils, by pressure on the phrenic and recurrent nerves, may produce reflex cough, which is more pronounced at night. A cough may accompany follicular tonsillitis. Reflex coughs can also arise from the presence of foreign bodies in the tonsillar crypts, or between the tonsil and the posterior pillar.

Intrinsic laryngeal coughs may be produced by local irritation, as from foreign bodies and neoplasms of the vocal cords, or by local inflammation.

The croupy cough of spasmodic laryngitis is familiar to all, and is frequently caused by the presence of lymphoid masses in the nasopharynx. The cough may be due to foreign bodies, or neoplasms on the cords.

In the neurasthenic and hysterical, laryngeal neurosis often complicates the general condition, giving rise to the short, socalled nervous cough.

A dry, yelping cough is sometimes indicative of laryngeal chorea, which may or may not be accompanying a similar systemic condition.

Stimulation of the filaments of the vagus distributed to the stomach, the existence of tapeworm, or the presence of gallstones, may be the cause of reflex cough. It may also accompany cardiac disease, nephritis, or disturbances of the genitourinary tract.

Cough may mean the presence of an aneurysm, an enlarged bronchial gland acting through pressure, or even indicate impacted cerumen in the external auditory canal, acting through the auditory branch of the pneumogastric. Stimulation of the peripheral nerves of the skin may produce it.

A short dry cough may be an indication of basilar meningitis, or abscess, or a tumor of the cerebellum. At puberty girls of an unbalanced nervous system frequently suffer from a deceiving reflex cough.

Hoarseness.—Under this general title we may class, for practical purposes, all changes in the natural voice from a slight vocal weakness to complete aphonia. According to its causative factor, this symptom may be of little consequence, or may signify changes of great importance. A due regard to those possibilities will in every instance be of assistance in diagnosis and prognosis.

While it would be absurd to assert that exact diagnosis of a disease could be made from the character of the voice, there are many conditions that the trained ear may recognize through voice alteration. A comprehensive study of the voice in relation to disease would be interesting but too exhaustive for the limits of this paper, and we can only review briefly those causes of hoarseness observed in common practice. Neither are local laryngeal affectations, as topical inflammations, neoplasms, and other conditions, strictly within our province.

Hoarseness may arise from any cause that directly or indirectly affects the functional or structural properties of the larynx, or that modifies in any way the resonant qualities of the voice.

Resonance is derived from the nasal chambers, the nasopharynx, the accessory sinuses, and the pharynx. Any diseased condition of these would, therefore, serve as a modifying cause, and hoarseness is a constant and important symptom of such conditions.

Tonsillar hypertrophies interfering with resonance and the mobility of the parts, and also interfering with and altering their vascular supply, give a muffled tone to the voice. The same change is noticed in peritonsillar affections and in inflamed conditions of the soft palate, a function of which is to act as a valve regulating the amount of air entering the mouth through the oropharynx. The voice in cleft palate is of similar tone.

All nasal and postnasal obstructions occasion the same lack of resonance, giving rise to a dull monotonous voice. These causes also act indirectly through the accompanying mouth breathing, occasioning laryngeal irritation and consequent inflammation. Lingual hypertrophies produce hoarseness through irritation.

Diseases of the pharynx produce hoarseness by diminishing the lumen of that part of the respiratory tract, as in the husky voice of clergyman's sore throat, a condition sometimes called throat tire.

In all cases of hoarseness, the influence of climate, occupation and habit must be considered. Irritation from an unaccustomed air, working in dusty atmosphere or among vapors, excessive smoking or drinking are sources of irritation to the larynx. More especially is this remarked among mouth breathers.

Hoarseness complicates or accompanies many general diseases, among which we may mention tuberculosis, syphilis, typhoid, rheumatism, gout, diabetes, uncompensated valvular lesions, malaria, scurvy, purpura, chronic nephritis and hepatic cirrhosis, also disturbed vasomotor conditions. In some of these the hoarseness is the result of edema from venous stasis, as in chronic nephritis, cirrhosis, and cardiac insufficiency. In diseases of the heart and circulatory system, its significance is valueless as it occurs after the other symptoms have been well established. In nephritis it may precede all other symptoms. Hoarseness or aphonia with jaundice indicates cirrhosis, the symptoms being occasioned by local absorption of toxins.

In diabetes, hoarseness is at first dry and rasping, then of an ulcerative character. Hoarseness in malaria is of slight account. In scurvy and purpura it occurs from edematous conditions. In influenza, it usually results from catarrhal laryngitis, but may be serious, showing laryngitis hemorrhagica. In smallpox, measles and scarlet fever it is from catarrhal changes. Hoarseness in a rheumatic or gouty subject will generally disappear under constitutional treatment, but it may indicate laryngeal edema. Sudden hoarseness in uremia is serious, pointing to hemorrhage. A decided change of voice in croupous pneumonia may be the result of ulceration in the larynx. In herpes and in pemphigus, this symptom indicates an invasion of the larynx.

Hoarseness in syphilis and tuberculosis is common, and its significance universally recognized. The voice in syphilitic laryngitis is of a peculiar, painful, indescribable but characteristic intonation. A point to remember in suspected syphilitic hoarseness is that in some subjects hoarseness can also be produced by the use of potassium iodide.

The change in the voice is frequently the first noticeable symptom in tuberculosis, the larynx showing signs of the disease in its incipiency.

Hoarseness in pregnant women requires immediate attention and examination of the larynx. A liability to tuberculous laryngitis seems to exist in many of these cases when the disease has been otherwise latent and the ulcerative process is rapidly progressive in destruction. Reflex hoarseness may also accompany pregnancy.

Arterial and ovarian disturbances and operations upon the generative organs may occasion reflex changes in the voice. The change at puberty is familiar, and is the result of a hyperæmic condition, as is also the hoarseness sometimes noticed in the menstrual periods.

The high, shrill voice of old age is due to ossification and loss of vibration.

Hoarseness occurring with buccal symptoms of lead poisoning will probably be found to be due to the poison. That following the appearance of a tumor in the mouth suggests actinomycosis.

In children continued hoarseness usually indicates adenoids, and its significance is accentuated when it is accompanied by numerous paroxysms of croup. This is especially true in rachitic children. It may also indicate papillomata, which, however, are frequently a product of mouth breathing.

Reflex spasms of coughing may also occur from the presence of seat worms.

Hoarseness in diphtheria is of deep significance as indicative of an extension of the diphtheritic membrane to the larynx. In cases convalescing from the disease, hoarseness indicates postdiphtheritic paralysis.

The superior laryngeal nerves supply sensation to the larynx and the inferior or recurrent laryngeal is the motor nerve for all the intrinsic muscles of the larynx. Hoarseness is occasionally produced by pressure upon the recurrent nerves by growth of the neck, esophagus, or mediastinum, by goitre, or specific gumma. Pleuritic adhesions and induration of the apex of the lung may give rise to disturbance of this character, being more likely to occur on the right side.

Pressure of an aneurysm of the aorta upon the left recurrent nerve is the most frequent cause of voice change in this class. The recurrent character of the hoarseness is often a point of differentiation between aneurysm and solid tumors, the pressure varying in aneurysm. It may be an aid in the diagnosis of the incipient stage of aneurysm. A metallic cough may be present with a hoarseness due to pressure.

The voice, of course, may be affected by lesions of the central nervous system.

Nosebleed.—Nosebleed may be due to trauma, pathological changes, vicarious hemorrhages or constitutional disturbances.

No case of nosebleed is too insignificant to be ignored, and an earnest effort should be made in every instance to ascertain the exact seat and cause of the hemorrhage.

The thin mucous membrane spread over the cartilaginous or bony surface and plentifully supplied with blood from the septal branch of the superior coronary artery renders the septum a favorite site for hemorrhage, and in fully ninety per cent. of the cases the bleeding is from the anterior inferior portion of the triangular cartilage—the locus Kussilbachi.

In grave disturbances of the circulatory system, the hemorrhage is more likely to be found in the lateral walls, generally in the folds covering the turbinate bodies.

Of trauma and morbid changes it is unnecessary to speak at length. They belong more especially to the domain of the rhinologist, and do not come within the scope of our discussion. In all catarrhal conditions of a congestive nature, local lesions may occasion hemorrhages. Spontaneous epistaxis, especially after blowing the nose, may occur in cases of plethora, scorbutus, purpura hemorrhagica, pernicious anemia and hemophilia. Disturbances of the circulatory system are common causes of epistaxis, as in cardiac diseases without compensation, and even with compensation on rise of arterial pressure. Venous stasis in mitral disease or in aortic insufficiency is another cause of this class. Cirrhosis of the liver, Bright's disease and chronic alcoholism may have nose bleed as a concomitant symptom. Vasomotor disturbances may also occasion nose bleed. Nosebleed in the aged, seemingly without cause, may be an indication of incipient arteriosclerosis,—a fact with important bearing in the treatment of aged patients. Epistaxis is often one of the premonitory symptoms of typhoid. If it occurs

late in the disease, it lends graveness to the prognosis. In the later stages of purpura, malignant disease, and diphtheria, it should also influence the prognosis. In scarlet fever and measles it indicates a severe type of infection. It sometimes occurs in malarial fevers.

Epistaxis occurring with inflammatory conditions of the nostrils may indicate fibrinous rhinitis or diphtheritic infection. In severe cases these hemorrhages may be dangerous. The epistaxis of syphilis and tuberculosis is due to local lesions. In young boys recurrent epistaxis may indicate masturbation. In children a unilateral hemorrhage mixed with a mucus discharge usually points to the presence of a foreign body. Epistaxis in children is often indicative of adenoids. Nasal hemorrhage is the commonest form of vicarious menstruation. It may attend other forms of sexual irritation, and is also a common symptom in hysterical women.

CHRONIC SUPPURATIVE OTITIS MEDIA

The chief and most dangerous complications of middle ear infections are infection of the brain and its membranes, of the intracranial sinuses, and of the jugular vein. The carotid artery is seldom affected. The immediate danger is involvement of the mastoid antrum and cells without which the others rarely occur. The usual paths of infection are through the blood and lymph channels, and by dehiscence of bone in necrotic areas. Infection of one of the sinuses of the jugular results in septic phlebitis, which may be accompanied by septic thrombi. The dura mater is commonly affected by direct perforation of the tegmen tympani, giving rise to extra or intradural abscesses, i. e., localized pachymeningitis or to general pachymeningitis. Leptomeningitis may ensue from extension of the infection to the pia mater or arachnoid, or the substance of the brain may be invaded with resultant formation of cerebral abscess.

General septicemia and pyemia may occur through the agency of suppurative otitis. Septic conditions, and pericarditis, septic pneumonia and pleurisy, abscess of the lungs, infarctions of the spleen or kidneys, metastatic abscesses of the joints are all conditions in which at times the primary infective cause can be traced to the middle ear. These disturbances are frequently negligently treated without reference to this casual factor. Arthritis and synovitis may likewise occur. Facial paralysis may result from necrosis of the fallopian canal.

Cases of somnolence, angina Ludovici, Jacksonian epilepsy, septic gastroenteritis, and of involvement of the gasserian ganglion have been reported as complicating chronic suppurative otitis. The liability of the inflammation being of tuberculous origin should not be forgotten. All cases of purulent otitis should be regarded as serious, remembering that the majority of nontraumatic cerebral and meningeal inflammations are of otitic origin and infectious in character.

CONCLUSION

In conclusion, let me emphasize the relative importance of special symptoms, however seemingly insignificant, to general disease, and impress the fact that occurring primarily in the routine of the general practitioner, upon him rests the responsibility for the serious conditions that may develop through failure of their early recognition and consequent neglect.

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Occupational Hazards—Fatigue, Work and Rest*

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In the brief space allotted to me I shall attempt to present hurriedly a variety of conditions that may be of interest in connection with the periodical health examination of men and women, and of children, too, from the viewpoint of the industrial background.

It seems to me that we should not limit our interest to preclinical signs in connection with periodical health examinations, because those who will come to us, will want not only a determination of the signs antedating disease or indicative of its approach, but they will rather wish us to serve as health accountants, so that they may have a record of their health assets and liabilities, and, projecting these against a background of past history and present occupation, obtain a forecast of the future. Every one is interested in prognosis particularly, and wishes an answer to the question, "To what extent will my physical assets and liabilities affect my future?"

I think that a word of caution as to the broader scope of periodical health examinations than is indicated by the phrase preclinical signs, is rather essential.

Susceptibility to various occupational diseases and occupational hazards varies, of course, very greatly. It depends entirely on the physical endowment inherited and acquired by different persons. I shall not lose myself in that discussion. In presenting a brief sketch of this subject I have attempted to follow as far as possible the sequence that would ordinarily be followed in the examination and the questioning of an applicant for a periodical health examination.

EYES

Among preclinical conditions in the eye which may be indicative of future trouble, nystagmus is encountered not infrequently among those working in dimly lighted places or those who work in constrained postures, and who assume an unnatural attitude in the course of their work. Take the coal miner, for example, he is often at work in an extremely unnatural posture, in what are usually dimly lighted places.

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The constrained posture, and the strain upon the eye muscles in particular, are evidenced in a short time, if one is watchful, by a slight nystagmus—usually lateral.

With reference to other eye conditions, we have frequently the beginnings of cataract in those who work in close proximity to furnaces. Men who are employed as stokers in vessels, who work in steel mills, occasionally present evidence of an impairment of vision, due to a beginning cataract.

The corneal scars that appear in the eyes of stonecutters are not without a large measure of significance to a watchful clinical observer. A diminution in the acuity of vision that may be very considerable is noted in the stonecutters. The stonecutter employs a mechanical device that causes four hammers to oscillate in a perpendicular plane and thus chip off stone and smooth the surface; he uses a new lens in a special frame to protect his eyes. Often at the end of four hours' work a degree of frosting of the lenses used to protect the eyes occurs that is hardly believable. It is necessary among some stonecutters to renew lenses twice a day.

This must suffice to give a glimpse of some of the eye conditions encountered as a result of occupational influences. The effects of glaring or excessively dim lights should be more familiar than they actually are.

NERVOUS AND MENTAL CONDITIONS

We have a variety of nervous and mental conditions due to industrial factors whose etiology I shall only indicate in broad and general terms. Those that are due to fatigue are exceedingly difficult to detect. They have not received an adequate measure of appreciation even at the hands of neurologists. The appreciation of those mental and nervous conditions due to fatigue has apparently lagged behind the appreciation of other clinical conditions in industry. Professor Southard before his death had made a substantial contribution to the understanding of various forms of psychic trauma in industry.

Mental irritability, sluggishness, a fatigue that evidences itself by an increase in the number of industrial accidents between the hours of ten and eleven in the morning and again between three and four in the afternoon, at which time fatigue effects are at their worst—these are common phenomena to the industrial physician.

Fatigue is manifested not only in the increase in accidents, but in a variety of painful disorders—for example, the neuritis that is so familiar in the form of telegrapher's or typewriter's cramp, and a variety of disorders that cause painful affections or that impair the motions of joints or muscles.

Hurry, piecework, and overtime work, are important contributing factors. You will find a great deal more of fatigue effects among skilled workers than among the unskilled. If you go into a large jewelry establishment, you will find that those who are doing the highly skilled work and who must not only use their visual faculties to the utmost, but who are doing extremely responsible work, of a character in which mistakes may total up a considerable amount in damages, are the ones who are likely to register the greatest number of mental conditions that are decidedly indicative of beginning trouble, and which, if neglected, may go on to cause a serious mental or nervous disturbance.

EFFECT OF POISONS

Various poisons employed in industry may cause nervous disorders. For example, one of the earliest signs of mercury poisoning in those employed in a hatters' fur establishment, where nitrate of mercury is employed in the carroting of hats in the felting process, is erethism—socalled; that is, a great degree of irritability, a proneness to quarrelsomeness, and to excitability. That quarrelsomeness may be often regarded as merely a casual personal peculiarity, but to the sharp clinical observer it has a significance that is far greater, and may be the first sign of mercury poisoning.

With regard to the tremor that is encountered among workers who use mercury, a very slight tremor may be an indication of beginning mercury poisoning affecting the nervous system.

HEADACHE

Carbon bisulphide, used in degreasing processes, in extracting fats from various seeds, in connection with the vulcanization of rubber, is an exceedingly important poison nowadays, and it causes certain nervous symptoms in the very beginning which are telltale evidence of trouble that must be early taken into account, or one will have to reckon with serious consequences. The nervous symptoms in carbon bisulphide poisoning are principally a headache which is felt most intensely about the root of the nose and the vertex, which spreads out and over the temples and down toward the shoulder blades. It is a peculiar, characteristic pain, an exceedingly sharp pain.

The subsequent effects of carbon bisulphide in causing symptoms resembling delirium tremens, progressive asthenia, and other conditions, cannot be dwelt upon here.

There are a variety of other poisons which produce headache or nervous manifestations, notably lead. The milder form of headache produced by lead—is often passed off as insignificant and meaningless and yet it may be quite indicative of the beginning deleterious effects of lead.

The early recognition of lead poisoning is notable and conspicuous for its absence even in the most prominent industrial communities. That has been pointed out again and again as a lamentable feature in the practice of medicine. Lead poisoning often is recognized only when we have marked paralysis together with a lead line constipation and colic that are so pronounced that even those who are not initiated into the intimate details of this subject may recognize the presence of plumbism. The headache is one of the beginning symptoms and should be remembered.

Headache due to eyestrain as a result of poor lighting, as a result of speedy work, as a result of glare, is to be kept in mind.

A form of headache not encountered so much in this community, but met with quite frequently in a place where explosives are manufactured, is the nitroglycerin headache among workers who are using nitroglycerin in the manufacture of gunpowder, TNT, and other similar products. The workers have a headache which is most intense, and which, if passed by and ignored may cause serious effects of nitrate poisoning to develop. A host of volatile drugs may cause severe headache.

ANEMIA

The anemia that is encountered among workers may have an industrial background and is notably due to two or perhaps three outstanding factors; anemia is one of the earliest signs in lead poisoning, and is frequently unaccompanied by the lead line, for this is found only in twelve to fourteen per cent. of even pronounced cases of lead poisoning; in fact it is usually unaccompanied by colic, or other signs of lead poisoning. Anemia is one of the precursors, so to speak, of lead poisoning.

Another industrial hazard of increasing importance and worthy of considerable thought is carbon monoxide poisoning in garages and wherever there is combustion of gasoline, coke, wood coal, and similar products. The hazard of carbon monoxide exists in exact proportion as ventilation is poor, and bears a definite ratio to the amount of fuel or gasoline that is being burned.

Carbon monoxide will frequently cause either a headache (a persistent headache, unexplainable on any other ground) or a marked anemia, and I therefore call attention to carbon monoxide as a poison which should be considered with reference to any complaint of headache or anemia.

Poor ventilation, of course, and other unsanitary conditions as well, are conducive to anemic conditions. The dietary of the worker I dare hardly do more than suggest as having a very definite relation to the development of anemia and nutritional disturbance.

SKIN

The skin gives telltale evidence of a considerable number of industrial hazards that have to be borne in mind. Jaundice is found notably through the use or manufacture or handling of TNT—trinitrotoluene. That was more familiar and often encountered during the war. During the war, too, we encountered jaundice in connection with the varnishing or doping of airplane wings, where tetrachlorethane was employed to make the wings moistureproof. Both of those agents, trinitrotoluene and tetrachlorethane, have a tendency to produce jaundice by virtue of their destructive action on red blood cells.

Eczema as a skin condition is encountered in a multitude of industrial conditions. Turpentine stands out notably as an agent that produces either eczema or a fissured or bleeding skin. Aniline frequently causes eczema. I am not now considering the other effects of aniline; I am limiting myself to skin effects. The blueness and cyanosis which aniline produces is of course not a preclinical condition. I point out these skin conditions as indicative of more serious damage that these agents may do.

A variety of furs, particularly raccoon and fox skins, are likely to cause eczemas.

Paraphenylendiamine, which is employed in the manufacture of hair dyes, has caused a great many eczemas as well as constitutional effects. These are properly preclinical conditions, indicating the effects of certain dangerous agents, which, if ignored, will produce damaging effects upon more vital tissues.

Ulcers, boils, and skin infections are often encountered. Who is there that has gone into a factory where arsenic is being handled, either in the form of Paris green or some other form of arsenic, who has not seen deep ulcerations in the skin produced wherever unclean hands came in contact with parts that were sweated? Mercurial ulcers are encountered in ever some many workers who handle this poison and may properly constitute a preclinical condition, the sole indication of something more grave that mercury may do if you ignore the ulcerative condition.

Hydrofluoric acid, used so much in the making of etched glassware, is an important agent. The paronychias and onychias, the marked eczemas and boils, the corroding effects of hydrofluoric acid are distinctive.

Chromic acid, with its perforations of the skin, its perforations in fact of the septum of the nose—a painless perforation—has to be borne in mind.

NOSE, THROAT AND EARS

Affections of the nose and throat are marked in the hatters' fur establishments. One finds upon examination of the nose and throat, and the nose in particular, that it is obstructed by the accumulation of a great deal of fuzzy material which is flying about in the atmosphere, causing not only local effects, but sometimes affecting the eustachian tubes and ultimately, though indirectly, affecting hearing—an important thing. Of course, hearing is affected in some industries not only by dust and by local infections, but by the overwhelming noise element.

Some years ago, in talking under the auspices of the County Medical Society, I had occasion to report that over fifty per cent. of the workers in one establishment were affected with permanent deafness as a result of the indescribable and unbearable noises to which these individuals were subjected during the long hours of their work.

The affections of the voice will not detain me. I might allude to them briefly as being something that teachers complain of as a result of exposure to chalk and room dust.

MOUTH

The mouth has to be alluded to for a moment because there some important indications are to be had of impending disturbances of a grave character. It is not generally known, for example, that where one fails to get a lead line on the gums, one may be successful in finding upon a close examination of the buccal mucous membranes a small or large blue or slate colored area opposite the molar teeth, which is quite indicative of lead poisoning, when one has become accustomed to it. It may show the deposition of lead when a lead line may be absent, and may be the forerunner of more grave symptoms of lead poisoning.

In the mouth, too, there is a larger and more distinctly bluish discoloration that is encountered on the buccal mucous membrane among those who are manufacturing thermometers or barometers, or who are preparing hatters' fur. They aggregate thousands of workers who pass through our hands in clinics, hospitals, and private practice, and in whom we fail to recognize these conditions.

The telltale evidence of corrosion of the teeth is not so important in this vicinity. Around Niagara Falls that becomes exceedingly important, and is evidence of the effects of strong acids which are manufactured in enormous quantities.

One of the gentlemen present at this lecture called

my attention to a striking mouth condition some months ago. In the course of surgical work that he was doing he came across a marked case of necrosis of the jaw bone. I believe, if my memory serves me right, that this one surgeon encountered three such cases in a fairly brief period of time recently among those who had been handling phosphorus and who probably had ignored a carious tooth, which is known to be a very particular source of hazard to anybody exposed to phosphorus poisoning. The physician who examines a person who comes in contact with phosphorus must pay careful heed to caries of the teeth, aside from the importance of dental infections in many other connections.

There are many other industrial conditions which may affect the lungs, the gastrointestinal tract, the kidneys and many other organs which I have not the time to refer to even in brief and sketchy fashion. A number of these have an even greater significance to the clinician and the patient than those which I have described in the foregoing.

The examples which I have thus far cited will, I hope, indicate to you that there are a host of important clinical observations and data which have been slowly accumulated during recent decades that are a closed book, not only to the average physician but even clinicians who pride themselves on the breadth and scope of their reading and observation. If my brief catalogue of just a few of these clinical data with reference to the preclinical signs of diseases caused by occupational poisons or factors have piqued the curiosity and challenged the interest of any among my hearers, I may promise them with assurance that a more detailed study of the effects of occupational influences will richly reward them.

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The Respiratory System

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In the limited space at my disposal it will be impossible to cover the subject of the respiratory system, so I will not stick to my subject but rather, I think, restrict it to what I consider really the most important factor, the question of pulmonary tuberculosis.

We will touch on some of the other factors in the respiratory system, particularly chronic disease of the lungs, but what I shall have to say is mainly concerned with pulmonary tuberculosis. Also I shall not stick to the subject in the sense that we speak of preclinical signs of tuberculosis, because there are none. I do not know what is meant by the preclinical signs of tuberculosis. My idea of what we are after, as medical clinicians, is not to find out disease that does not yet exist, but to recognize the actual signs of disease, early or potential.

Our problem in the practice of medicine is so to extend the bounds of our knowledge that we become more expert in picking out pathological conditions before they have come to the degree of disability where the patients recognize that they are sick. A socalled health examination takes place usually because, for some reason or another, a person who considers himself well comes into the hands of the physician. This is quite different from the ordinary procedure by which we, as medical men, only see people when they think they are sick for some reason or another.

Many of the chronic diseases, of which tuberculosis is, I think, a good example, come on so insidiously many times that it is extremely difficult for the patient to say just when he passes over from being a well person into being a moderately or slightly ill person. Now it is up to the physician, it seems to me, to try to find out, wherever he has the opportunity, a little more accurately than we have in the past, just where this borderline is.

When we come to health examinations, I doubt if there is any one serious disease which we come across more unexpectedly—unexpectedly, I may say, to the patient you are examining—than pulmonary tuberculosis. For that reason I think that it is going to be extremely valuable, if properly applied, to have this general extension of examination to people who think they are well; whether it is done in groups, such as industrial groups, or whether it is done through an education of the community, which this movement has in mind, of getting people periodically to consult their own physicians.

When it comes to the examination of the chest, one is not going to find a great deal, in the majority of these cases, in the way of pathological evidence of disease, and unless we are going to be able to have our suspicions aroused by slight evidence of possible disease, we are never going to find these unsuspected cases of pulmonary tuberculosis, of which there are a great many at the present time in the community.

It is, therefore, it seems to me, not a question of preclinical signs of disease, but making the earliest possible diagnosis, which is our job in this particular field.

Tuberculosis is a big problem still. In spite of the progress which we have made in the prevention of the disease, it takes such a heavy toll in disease and death that I think it cannot and should not be absent at any time from the mind of an examiner, whether he be an insurance examiner, or a family physician, or an industrial physician, or a specialist. It is one of the very common diseases.

The family physician, I think, is in a particularly difficult position in regard to a disease of this kind, for the reason that he frequently knows his patient so well that he is likely not to notice the slight deviations from the normal, which a stranger sometimes will notice.

Also I think that the personal relations are such that the patient often comes to the physician more as

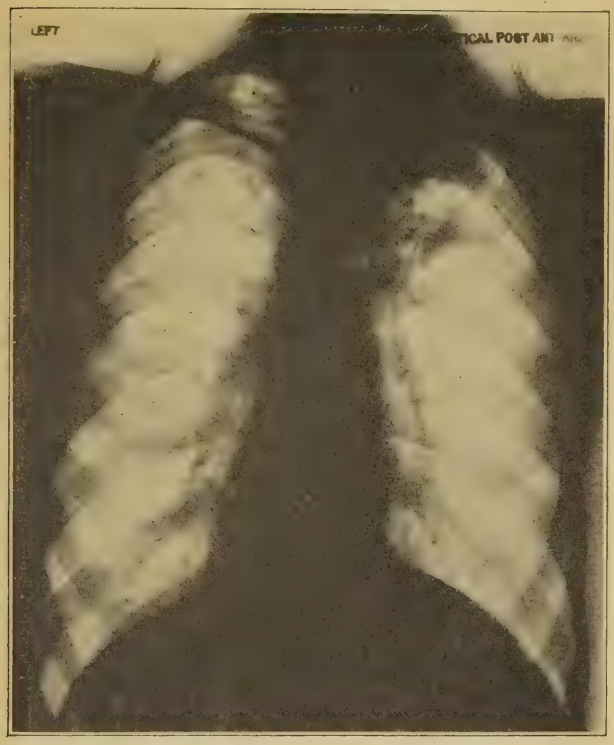

FIG. 1.—Definite tuberculous infiltration of the right apex. No physical signs.

a friend in rather a casual way and says, "There is not very much the matter with me, but I do not feel quite up to par," and that sort of casual contact leads to a rather casual investigation.

Tuberculosis, in its early stages, will never be discovered by any such method as that. Many and many a time we see in the sanatoria, where we have not only early but advanced cases of tuberculosis, dozens of cases, one after another, who have the same sad story to tell, that they, as they look back on it now, realize that they had the disease six months, a year or two years before it was recognized, and that during that time they have seen numerous physicians. This is not by any means always the fault of the physician. The patient often, intentionally or unintentionally, puts the physician off the track, but the fact is there nevertheless and the responsibility is a medical one.

We should not by any means consider that the early evidences of possible tuberculosis are confined to the chest. There are many other things which should excite our suspicion, and we would never find the condition in the chest unless such a suspicion is aroused. And I think we should approach this whole question of people who are perhaps a little but not much below par, with the possibility that tuberculosis is one of the great factors to be considered. I do not care whether you are speaking of the chest or whether you are speaking of some other organ, because tuberculosis is a systemic disease and not a local disease and one which finds its manifestation in practically all the organs of the body, but of course chiefly the lungs.

Now, what are the things that have in the past and are at the present time escaping the attention of the patient—or the prospective patient, because he does not always consider himself a patient—and the physician who sees him in various capacities, and may escape a rather careful investigation of the health examiner, that is, the person who is examining the patient who is presumably well? I believe that one of the great mistakes that we make in trying to recognize early disease of the lungs is the undue emphasis we place on the physical signs.

We begin as third year or second year medical students approaching the problem as one of physical diagnosis. I think we are biased from the inception of our contact with tuberculosis by that point of view. We make our diagnosis as early students on the physical side; we think of pathology in terms of the physical signs; and we think of tuberculosis as evidenced by physical signs, when as a matter of fact early tuberculosis will often, as I hope to be able to demonstrate to you by certain cases in my own experience, frequently show no physical signs at all, even when it is by no means incipient.

Certainly in this type of examination that we are considering you are not going to get, as a rule, much in the way of physical signs, and unless your suspicions are aroused to the possibility that there ought to be in such a case some abnormal physical signs, you are not going to make your diagnosis and save the patient at the inception of this infection.

The important thing, I think, for us to keep in mind is that tuberculosis, as it manifests itself clinically, has usually been preexistent for a long time without having any manifestations which have been recognized, but that if we find something in the individual patient which is somewhat suspicious, if we go back into the history, we will often be able to trace the path of that infection. In other words, tuberculosis as a chronic illness is not by any means a continuous illness. It manifests itself in what you might call a relapsing infection, with slight manifestations followed by periods of quiescence with no symptoms

FIG. 2.—Extensive disease of both upper lobes. Almost no physical signs.

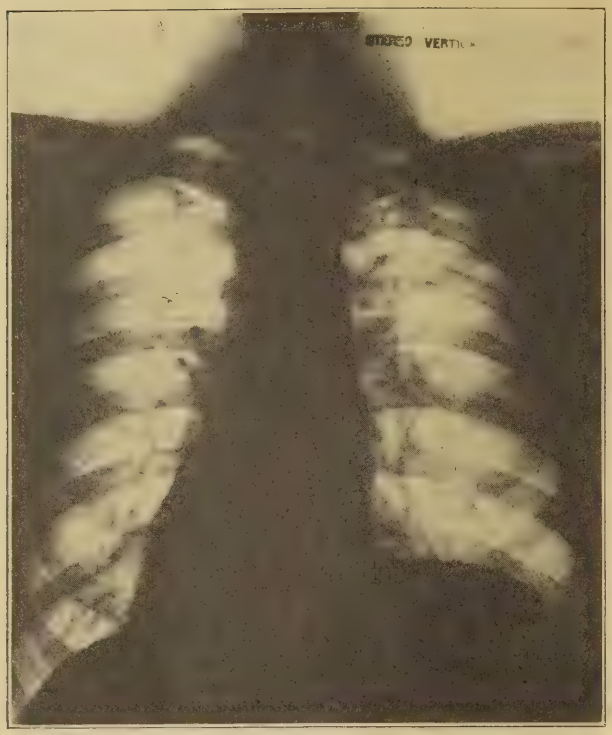

Fig. 3.—Marked lesion of the right upper lobe. Physical signs inconclusive.

over a long period of time, months or even years; then another exacerbation perhaps quite of a different sort than the first, and then finally the disease is recognized. Our problem is to try to catch that somewhere along the line much earlier than we are doing at present.

You take the patient who comes to you with definite cough, expectoration, fever, and physical signs; that patient will almost always have in his or her past history a story of a pleural effusion at some time or other, which was treated as such; a story of grippe which persisted with a cough for several weeks and then was cured; a story of malaria unexplained, over a period of weeks, with plasmodia never found in the blood; an ischiorectal abscess which was cured after a few weeks or months; a spitting of blood which was reported to the doctor, but because, as the patient will say, "I was in fine shape, and the doctor said that I was in fine shape, that blood came from the throat, and it must have because I never heard anything more from it."

Each one of those instances, or any or all of them, when it may be spread over eight or ten years, what does it mean? It means that the tuberculosis which you see and recognize today is the same tuberculosis that showed itself ten years ago in one or many of the manifestations—the pleural effusion, the grippe which persisted with a cough and then was cured, the malaria unexplained over a period of weeks, with nothing found in the blood, the ischiorectal abscess, or what not.

Our business is to pick up that clinical chain and make a complete examination—and we must pick it up before the patient comes to us with fever, loss in weight, cough, expectoration, and so forth, i. e., with advanced disease. One cannot go wrong in treating potentially as a case of tuberculosis, until proved otherwise, any case of definite, unexplained hemoptysis, any case of pleural effusion, any case of protracted cough for a month or so with or without physical signs, particularly if any of these have slight or only slight constitutional disturbance. Yet our experience seems to be that this is the last thing that is thought of. These little things come and last a week or two and then go, and we flatter ourselves into thinking that we have cured a patient of the grippe or malaria or pleurisy, or what not, and then it lies dormant and then comes up again, and when we see and make a diagnosis, we have an advanced case. That is simply due to our not having gumption enough to pick up the case when the evidences are so slight that the patient doesn't know he has anything serious; and we all do know that if we do pick them up, then the response is prompt and almost sure in the way of recovery.

Therefore, in any such case as that, it is extremely important to have a definite history, carefully elicited (and you will usually get the cooperation of the patient in this) by a suspicion aroused by something or other in the appearance, or something that you find, or something that they casually tell you in their story, which you pick out often with difficulty and get a disjointed story over a period of years which you must put together into a definite clinical picture; often your physical signs will bear it out, and sometimes they will not.

More important to my mind than the physical signs is not only this history connected up into a clinical picture, but the constitutional disturbance—slight malaise, slight fatigability, slight loss of weight, slight disturbance of digestion, slight irritability, with or without a little disturbance of afternoon temperature and rapid pulse. These are often more important in exciting your suspicion than are perhaps the

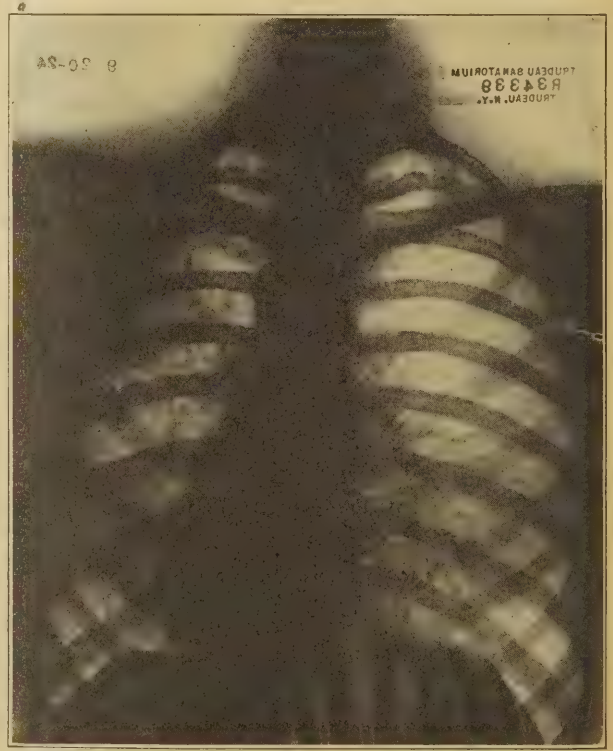

Fig. 4.—Extensive infiltration of the left lung. Very slight physical signs.

slight signs which may exist in the chest, which may perhaps very easily escape attention.

So that I want to urge, before speaking of the definite signs, the necessity that we, as medical men, should be more suspicious than we are of tuberculosis as a widespread disease and having that suspicion so constantly in our minds that we will be looking for this kind of story of which I have just given you the outline and for those kinds of slight symptoms which the patients will often make very light of, because they can work for months with that kind of a picture before they feel that they are even sick enough to go to a doctor.

The physical signs, I think, have been exaggerated in importance; so much so that I think if you turn to the student's medical textbooks and to our monographs on the early signs of pulmonary tuberculosis, most of us feel that that is really so complicated, the evidences are so slight, the importance of little deviations from the normal so great, that it is almost beyond us. As a matter of fact, there is nothing obscure in the physical signs of an early tuberculosis.

I think Dr. Lawrason Brown has done a very great service to the whole medical profession when he has simplified all this. He, as one of our leading specialists, instead of making the problem more complex (as a specialist is more likely to do) has simplified it greatly. In this respect he says, "There are five cardinal evidences of tuberculosis, which are present in practically every case, and if you were guided by them, you would not be more than five per cent. wrong." And what are these?

1. Positive sputum.
2. Definite hemoptysis.
3. Definite pleurisy with effusion.
4. Definite localized râles on coughing, above the level of the third rib, i. e., at the apex.
5. Definite x ray changes in that same area above the level of the third rib.

He says nothing about the slight changes of percussion, nothing about the lagging, or the muscle tone; nothing about these little changes which we have been taught are so essential. There they are, and he who runs may read; but some of us do not.

If every doctor could hear a râle that is in a chest and knew how to elicit it, he would not be long in making an early diagnosis. If we link up with that the fact that physical signs are often of little importance, and that the clinical signs are of more importance, we will make early diagnosis; at least, earlier than we are making at the present time.

The laboratory may help but the cases we are speaking of rarely have positive sputum. The tuberculin test is a thing we can use if we will, but it has no great value in adults. The same thing applies to the complement fixation test. The x ray is extremely important, and the thing is to know when you want an x ray. The thing you want to do is, when you have a case that is suspicious and you can not hear anything in the chest, if it is suspicious in any way, always have an x ray.

I am going to show you in just one moment some cases in which I was unable, even after going back after the x ray, to find anything abnormal in the physical examination. The thing is to have an x ray taken in suspicious cases, whether you hear anything or not.

Not all cases that have suspicious physical signs have actually tuberculosis. That is extremely important to remember. There are thousands of cases on the board of health books today that are healed tuberculosis, and, having once been put there, no one had the nerve to take them off. They heard some signs and they never had the courage to say that the first doctor was not right. In other words, the fact that a doctor can find the signs of previous tuberculosis doesn't mean they now have the disease. How can you tell? You watch that case and find if there are any clinical signs. There is no sense in sending a patient with râles for a few weeks to the Adirondacks simply because he presents signs of a previous tuberculosis. In other words, a healed tuberculosis will leave a scar which a competent examiner can find, and our job is to pick out those that are active and those that are not; and we must not do the injustice of making a case a positive active case of tuberculosis when it is simply an old healed, arrested case, evidences of which are often there without the patient knowing it.

Those are the main things, it seems to me, that we should keep in mind. There are dangers on both sides. There is danger, on the one hand, that we will let slip by the case that is tuberculous, and there is danger on the other hand that we will call a condition tuberculous in which after all the patient simply shows the evidences of a past infection.

Now, it needs all the commonsense we have, to steer a clear path before us, but it is a question of simple, ordinary clinical sense and commonsense, in which I should like to emphasize particularly that constitutional disturbance and the story of the patient is more important than the physical signs themselves; and that the x ray is an extremely important and valuable adjunct to the determination.

NONTUBERCULOUS CONDITIONS

There are many other conditions besides tuberculosis in the respiratory tract.

Since the influenza epidemic there have been many subacute and chronic infections of the chest which are localized, which closely simulate tuberculosis, but they do not show some of the things that tuberculosis generally does. In the first place, the physical signs are usually quite extensive. In the second place, they are almost always in the lower lobe instead of in the apex. In the third place, the sputum is often abundant and never contains tubercle bacilli. In the fourth place, the x ray shows almost nothing, while the same signs in pulmonary tuberculosis will show marked density of the lungs. We have all seen many cases diagnosed as tuberculosis that do not belong there at all. They have extensive physical signs and a constitutional reaction quite different from tuberculosis symptoms.

In connection with these health examinations, I should like to speak of tuberculosis carriers. They are usually those chronic fibroid cases often associated with emphysema and bronchitis, particularly in older people. Whenever we get an older person who is rather thin, with emphysema and bronchitis and winter cough, those are the persons to whom we refer as tuberculosis carriers. You often will find that those patient's sputum will be loaded with tubercle bacilli; yet they are not sick. There are many of these chronic patients going around, and from the

viewpoint of prophylaxis it is often important to pick those cases out.

I also want to speak of the importance of what Dr. Dougherty is going to bring up in connection with upper air passages, and that is that a lot of these conditions in the chest which are nontuberculous, that are chronic in nature, are often secondary and are dependent upon infections in the upper air passages and particularly in the sinuses; and that many of these conditions which bother us much will clear up if the upper air passages are properly taken care of; and in many and many a case of persistent bronchitis and persistent localized condition of the lower lobe, persistent peribronchitis will clear up when the sinuses are properly treated.

I have about eight or ten illustrations which will show what I have in mind in connection with the difficulty and importance of having x rays.

Case I (Fig. 1).—This patient came to me with a story of a slight cough for six months, no other symptoms. He came for examination because he wanted to be married and on that account thought he ought to be examined. A real health examination. He felt perfectly well and I found no abnormal physical signs but on account of his cough I had him x rayed. He showed definite tuberculous infiltration at the right apex. He took the cure and is today perfectly well and happily married.

Case II (Fig. 2).—This patient had stopped work a month before I saw him on account of persistent indigestion. He consulted a gastroenterologist and while under his care a slight cough developed. He was sent to me and the only abnormal physical sign that I could find was slight dullness at one apex. The x ray showed extensive disease in both upper lobes.

Case III (Fig. 3).—In this case the patient had a slight cough and expectoration for three months; no other symptoms. The physical signs were inconclusive but the x ray showed a definite lesion in the right upper lobe.

Case IV (Fig. 4).—This patient felt perfectly well and had had no cough, but the previous week had a marked hemoptysis. The only physical signs I could discover were a few râles in the left axilla, but note what the x ray showed—an extensive lesion with involvement of at least one half of the left lung.

The other slides showed much the same thing. That is, slight symptoms, few or no physical signs, but a definite x ray picture.

The lesson of all of these cases is that only an x ray will show up many of them and we must be alert to suspect that tuberculosis may be present and be prompt in having the x ray examination made. If we do so we will save many lives.

In conclusion, let me emphasize that we will make correct diagnoses if we can only keep our attention fixed on the problem of trying to pick up these little deviations from the normal, getting the picture in our mind, being suspicious; picking up the little things by the wayside, and putting them together into a clinical picture; taking an x ray when our suspicions are aroused and the physical signs are equivocal or absent; and then, on the other hand, where we have physical signs and no constitutional symptoms, making sure that we are not dealing with an old lesion. These, it seems to me, are some of the high spots which are our problems in making health examinations as far as pulmonary tuberculosis is concerned.

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The Prescription of Exercise and Diet*

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The most important part of the work of the health physician begins when he has finished his examination. With a thorough command of the subject of preclinical medicine, coupled with an ability to estimate its significance to the future progress of the health client, the physician should have little difficulty in arriving at a clear understanding of what the oncoming years will bring forth. The whole value of the examination depends upon the ability of the physician to modify the future life of his client favorably, to remove obstacles and dangers, and increase the margin of health, happiness and efficiency. This is of great importance to the client. It is of greater importance to civilization because the ripened service of valuable men is frequently rendered best in the decades after the age of fifty.

THE BASIS FOR THE PRESCRIPTION

Heredity.—In the client there is a tendency to develop those diseases and deficiencies which appeared in his family tree. He will deteriorate in a manner similar to its dead or dying branches. Your prescription should postpone a like fate.

Previous history.—Your client's previous history will show him damaged or vulnerable in definite ways. It is your duty to eradicate all the relics of the pathological past, and clean the tissues of danger and damage.

Habits of life.—The daily life of the health client, clearly recorded in all of its various phases in your history, contains the most important facts for your prescription. Men and women live mainly by instinct. They eat, work and sleep as their heredity and circumstances command. They do not direct their lives. They simply live, and into their lives creep a variety of maladjustments and habitual errors which daily repeated gradually cause deterioration and disease.

It is not enough merely to take a record of the habits of diet, exercise, rest, recreation and other economic and social factors. It is necessary to evaluate them and to apply this knowledge toward the correction and direction of the life of the patient.

Physical examination.—The results of the physical

*Read as part of a symposium on health examinations, presented under the auspices of the Medical Society of the County of New York and the New York Academy of Medicine, February 3, 1925.

examination of the client give further data for his instruction. You have analyzed his anatomical structure, observed his deficiencies and weaknesses and estimated their influence upon his future life. By various functional tests you have determined the efficiency of the internal organs. You have searched for signs of peculiarities in his constitution for the earliest preclinical foreshadowings of disease and you are prepared to take such measures as will prevent deterioration, forestall disease or cure it, if it is already present.

With this series of facts laid out before you, you are now prepared to give your prescription to your health client.

PARTS OF PRESCRIPTION FOR HEALTH CLIENT

In writing any prescription, we may well keep in mind the old instruction of our fathers in medicine: *"Curare, cito, tuto et jocunde"*—"To cure quickly, safely and pleasantly." All of these points are to be borne in mind in considering the various parts of the health client's instructions, which are:

More diagnosis.—The health examination is best conducted by the family physician in his own office in personal conference. It is true that a more extensive record may possibly be gained by putting your client through a battery of experts in different specialties, but this has the disadvantage of great expense, a loss of personal touch and a confusion of counsel. It is permissible only when the health client comes back to his family physician for interpretation, direction and comfort. The family physician is the ideal health consultant. He must, however, recognize the need for further diagnosis from laboratory or specialist. He can no more practise the health examination without frequently referring his cases for further diagnosis than he can practice all the specialties which they represent. The first part of the prescription, therefore, is often more diagnosis.

Drugs.—There will frequently be found in the health examination conditions which require recourse to the pharmacopœia. Drugs are indicated and should be given. The fact that this is a health examination must not exclude proper therapy.

Diet.—One of the greatest influences toward health or disease is the daily diet. This will be taken up in detail later in this article.

Exercise.—While exercise is one of the most important fields in the prescription of health, it can easily be overdone. Neither exercise nor diet should be considered curealls, nor should any physician be so far swayed in his recognition of their importance as to make an exclusive system of either.

Mode of living.—One of the most important parts of the health prescription is what I call "the twenty-four hour prescription." It is based upon the science of personal hygiene applied to the physical condition of the health client and all of the circumstances entering into his life. We seek to arrive at an optimum program that he can follow. It is absurd in most cases to prescribe the ideal, for the ideal prescription is one which is academic and not feasible. There must be considered the elements of work, worry, strain, hazards, habits, recreation, rest, outlook, and—what is most important but usually neglected—sex habits and familial and social relationships. The health consultant is placed in charge of the client's future life. Physicians are too frequently like the Pharisee, who passes by saying that these matters are unfortunate, but they do not concern him as a physician. The health consultant, on the contrary, must play the part of the good Samaritan, who steps out of his medical path to care for the whole man.

Encouragement.—The health consultant must not only lay out a feasible program but it must be made attractive enough to be followed. Men are not impelled to action by intelligence one tenth as powerfully as by emotion. The imagination must be stimulated. One hundred per cent. living must be made to seem worth while. A careful study must be made of human incentives and motives. Without these, the health prescription falls of its own weight and no good has been done.

Followup.—If the health client is not followed up, he soon tends to resume his previous pernicious program. A continuing health service must be rendered. This involves the following elements:

Further diagnosis from laboratory or specialist must be obtained if necessary, and the diagnosis completed. The health client should return at the end of thirty days to report his success in following his program. This tests the client and tests the program. The consultant then knows whether the impetus toward health has been sufficient and well directed, and he can renew it. Here it is important to have simple tests of health, which can be made by the client himself, as well as to supplement those which can be given in the physician's office. Every client should be given a health diary in which he records his progress toward one hundred per cent. health during each month, and, if necessary, any intercurrent illness. This must not be made the text of a sickness diary for the further involvement of neurasthenics. The client will return to the consultant's office upon call or at stated intervals, establishing a relationship which is wholly beneficial. Of course, it is important that the health client be given medical treatment if necessary.

The prescription.—In general, the prescription should be simple, clear, concise, definite, informative, complete and enjoyable. The consultant should prescribe nothing which, in similar case, he would not do himself, and the test of sincerity is whether or not he follows the instructions of his own health consultant. The form of the prescription is important. If it is given by word of mouth, it will fail. It should be written or printed. It should not be merely in the form of brief notes. The best prescription is in the form of a health booklet printed attractively, and containing, in addition to the prescription, a record of the important points in the examination, especially those in which the client can be expected to work for improvement, notably, the measurements of the chest, abdomen, posture, weight and strength. A record of pathology is, in general, best omitted. In this prescription, by the side of the client's record should be placed the standard he is expected to attain.

SUMMARY

In brief, the prescription should be based upon the complete study of the client. It should contain both medical and social elements; it should be stimulating, attractive and a permanent possession.

PRESCRIPTION OF DIET

There is a best diet for every man, woman and child. It is the purpose of the consultant to determine what it is and to get the client to follow it. The diet should be prescribed for the man and not for the disease. We are inclined to consider disease as an enemy which has gripped the patient. It is better regarded, however, as a physiological process, perhaps in some way gone wrong, but yet an endeavor on the part of the body to meet difficult and distressing conditions. We will then aid the physiological process rather than merely deliver a frontal attack on the disease. In general, we are convinced of the fact that a man's diet largely determines his health, happiness and efficiency. At the outset, diet will be regulated according to the age. The adolescent needs ample calories. The period of manhood is one in which the dietary sins lead to the disabilities of maturity. At the menopause these errors begin to show this, and in old age their maximum destruction is manifest.

GENERAL ERRORS COMMON TO CIVILIZATION

Excess of carbohydrates.—There is an average of 135 pounds of sugar taken annually by each man, woman and child in the United States. Cereals and starches are increasingly available. This is the result of an instinctive taste for this kind of food which is quickly transmuted into energy. Taken in excess, it is destructive. The reason why there is implanted in every modern child and man a desire for sweets is that in our previous uncivilized state, sugar was difficult to obtain, honey was hard to find and sugar cane was not generally cultivated. It required the implantation of a strong instinct to urge sufficient action to get it. We inherit the urge and have developed the supply far in excess of reasonable needs. The result is injury to the stomach, pancreas, colon, joints, arteries and capillaries, with fibrosis, obesity, diabetes, myocarditis and the like in its train. Sugar is best understood by this chemical definition—a hexatomic alcohol—and its excess should be regarded as preclinical to all degenerative diseases.

Excess of animal protein.—Meat, in our uncivilized state, was hard to get. It required a great deal of initiative and energy to bring home the wild game to the pot. Hence, the strong hereditary urge which makes a thick, rare beef steak the most satisfying article of food to the energetic middleaged man. An excess of animal protein is of greater toxicity than any other form of food. We not only eat too much of it, but enhance at one stroke its taste and destructive power in processes of preparation for the table. Too much animal protein is preclinical to every form of fibrosis and systematic deterioration.

Deficiency in vitamines.—With a desire to make food more palatable, cereals and other vegetables are robbed of their vitamines by cooking or refinement, with the result that civilized man, on a too well prepared diet, is suffering generally from vitamine starvation.

Deficiency in roughage.—The same process of cooking and refinement of food stuffs removes the elements of bulk and roughage which stimulate the digestive tract. Stagnation, with its train of resulting evils, creeps in, a variety of toxins are produced and work their results.

INDIVIDUAL DIETARY CONSIDERATIONS

Heredity.—The too frequently neglected prenatal history of the individual frequently gives an important clue to diet. We find in the ancestry many diseases which could have been prevented by proper diet. These, which are likely to appear in the client may be ameliorated, prevented or postponed by proper action. It should be remembered that every disease found in the ancestry is a preclinical sign.

Previous history.—Every disease from which the patient has suffered gives indication of one or more tendencies, or indicates a tendency for its own return in its own identity or in some disguised form.

Present habits.—Every client's history should include the following: a report on the customary menu for breakfast, dinner and supper; the particular foods which are especially liked or disliked; those which cause discomfort; the question of bowel movement; and the time and circumstances under which meals are eaten, there should be included an intestinal motility test by the use of carmine or charcoal.

Present complaints and physical examination.—The usual gastrointestinal symptoms should be considered and the constitutional elements which may be traced to errors in diet.

Additional considerations.—Age, race, religion, season, locality, income, intelligence and social status.

NATURE OF PRESCRIPTION

Omissions and limitations.—The most common limitations are, in the order of their importance, animal proteins, carbohydrates, salt, fat, water, bulk, with specific omissions based upon allergic sensitizations.

Prescriptions.—Varieties of food usually scanty or omitted from the diet should be emphasized. These commonly include bulk, vegetable proteins, water, milk, eggs, roughage, calcium and vitamine rich foods.

Element of intelligence.—It is often necessary to lay down a diet in detail, not simply stating what should be eaten and what should not be eaten. It is sometimes possible to give the client information on his condition and on the nature of the foodstuffs which he should use or discard. In the last analysis, the client is in charge of his own diet and he should have sufficient information on the subject to guide him intelligently. It is the consultant's task to arouse intelligent interest and bring it to bear on the problem.

Special diets.—Unquestionably, it will at times be necessary to advise special diets for pathological conditions. Complete or relative fasts, or the omission of a meal a day for various periods, now forms a recognized method in hygiene.

FORMS OF PRESCRIPTION

In the usual office call of a sick patient, unfortunately, the consideration of diet is frequently omitted. This mistake should not be made in the health examination.

Verbal prescription.—Instructions on diet given in cursory verbal form are most ineffective.

Written memorandum.—The written memorandum is fairly efficient. It unfortunately takes a great deal of time and is likely to be incomplete.

(To be concluded.)

Historical Medicine

Why the History of Medicine Should Be Studied by the Medical Profession*

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One can never be fully in possession of a science until one knows the history of its development and this applies to medicine as well as to the philosophy of the sciences in general. It was not so very many years ago that the fevers existing along the coast of Greece were not understood and naval surgeons who met with them supposed that they were dealing with either a new form of typhoid fever or some new pernicious febrile affection. Then Littré confronted the modern descriptions with those found in the Hippocratic Collection, thus giving them their true names and real significance. Researches conducted in recent years have shown all this to be true and the diseases observed in the regions are the same as those described by Hippocrates more than twenty-three centuries ago.

Then, too, the very best procedures for reducing dislocations are found in the Hippocratic Collection and we know, according to the texts of Antyllus, that the operation for the cataract was extensively practised by the ancients, while in the Hindu text of Susruta there is found a very precise and detailed description of lithotomy.

The medical profession of today lives too exclusively in the contemplation of the socalled modern discoveries, and neglects—we will not say the work of the ancients—but that of our immediate predecessors. For example, the best editions of Laennec are now entirely out of print and the modern publisher, who well knows the requirements of today, would never dream of reprinting this classical work.

But the method in medicine has not changed; it is the same as that followed by Hippocrates and disdain of our predecessors, as Leibnitz has rightly said, will expose us to the same mistakes and the same uncertainties which in the past have delayed the progress of science. They may be better avoided when one takes advantage of the experience of the past: "to neglect the past of a science," says Dezeimeris, "means in reality that it must be recommenced every day." We agree that well observed cases will always retain their value and should be received with respect, yet on the other hand doctrines are changeable and require an incessant revision. There are periods in which their transformation takes place with such suddenness that it almost assumes the shape of a revolution and such great progress frequently leaves behind it a period of confusion which is propitious for marked reaction.

It is also quite true that an excessive and exclusive cult of medical history may lead to that state of inertia which caused the physicians of the sixteenth century, who only searched for the knowledge of truth in the Greek, Arabian and Roman authorities, to fall into contempt among all. This state of affairs, however, could only be due to abuse, and the abuse of erudition in medicine certainly need not be feared at the present time.

In examining the history of medicine the question of the history of disease or historical pathology must not be overlooked. It is a vast field and certainly represents the most important part of the history of the healing art. Historical pathology gives us descriptions of disease in all ages that could be exactly applied to the diseases of today, thus showing that there are diseases of all time and all places. These maladies form the common property of human pathology; they are the inevitable result of the conflict of man with his surroundings and his struggle with the general forces of Nature. Without speaking of those traumata to which man has been exposed in all places and for all time, one meets with morbid processes arising from the influence of heat, cold, dryness and dampness. Here again we will find those morbid processes which will afflict man to eternity, the cause of which is the result of passions, excesses of all kinds and neglect of hygiene. Medical history also shows us other diseases which, although not occurring in all places, have existed in all times, and reciprocally. For example, may be mentioned diseases of the seasons of the year, febrile affections of a continuous type and those having an intermittent or pseudocontinuous type, affections produced by poverty, those which arise during great social revolutions and those resulting from intoxication from food and drink.

Historical pathology also shows that the diseases unceasingly increase and, although this may appear a paradoxical coincidence, it is true that they do increase in spite of the great progress in hygiene as we advance through the ages. However, the majority of these diseases which successively appear in medical history are not new diseases; they are diseases which, with the progress of science, have been recognized as types apart. Thus diseases of the heart have come to the front through the progress of diagnostic methods, likewise diseases of the kidney, and then suddenly a given renal affection will be separated from the common group. All this applies to diseases of the brain and cord. And here history notes in this great progress the names of Corrigan, Bright, Rostan and Duchenne.

On the other hand, historical pathology shows us that some of the diseases described by the ancients have disappeared, while others have been simply dormant for centuries and suddenly reappear from time to time; others appear to be definitely extinct, and nothing leads us to suppose that they will reappear.

Historical pathology is followed by the history of nosography. First, symptomatology was developed and perfected. After having studied disease from external signs, on the surface so to speak, the time

*The Introductory Lecture to the Elementary Course on the History of Medicine at the University of Geneva, delivered April 25, 1925.

finally came when each organ was individually examined and perfected diagnostic methods have resulted in the perfecting of instruments for physical examination.

The prognosis and etiology of disease were the great glory of the ancient physicians, and it is not too much to say that little has been added in modern times. Yet modern medicine has marvellously perfected symptomatology and diagnosis, but in so doing it has only verified the truth of ancient acquisitions made in the domain of etiology and the prognosis of disease. On the other hand, pathological anatomy is a modern science founded by the great Italian physician, Morgagni, although all justice must be done to Theophilus Bonet, of Geneva, who wrote his *"Sepulchretum, sive Anatomia pratica ex cadaveribus morbo denatis," Geneva, 1679,* which formed the foundation stone for the work of the physician of Bologna. By the more complete knowledge of lesions accompanying disease and specifically characterizing it, pathological anatomy has tardily given us a more exact idea of the morbid species. Yet history shows us that physicians were not entirely without the information necessary to form a conception of the nature of morbid processes.

Therapeutics at the beginning had gone far beyond the other branches of medical science, and in truth they even preceded the observation of disease. The innate sentiment which forces man to alleviate pain in others made him search from the earliest times the means of cure, but at the beginning he invoked the clemency of the higher powers and asked assistance from his familiar deities. Prayers, sacrifices and incantations were the first attempts at therapeutics. These practices are found today among all primitive people and those whose civilization has decayed.

Inversely from what is done today, man at a later period did not search for general indications for treatment, but he asked of others who had had experience what plant was successful in controlling a given symptom; there was no method in therapeutics, there were only remedies. But the number of these increased daily and to plants were added the use of metals, which in the Islamic school acquired a very great importance. It was not always a successful empirical trial which introduced a new drug into therapeutics; it was more often some futile consideration deducted from mythological attributes or gross analogy. Hygiene, which is derived from physiology and etiology, is contemporary with the study of the cause of disease, or perhaps it were better to say that it was born from the terror of rather than the knowledge of disease. It had been an art before it became a science. In Egypt and in all the Orient hygiene was a part of the religious cult and the sacerdotal injunctions imposed upon the people introduced into their customs many practices which are today applied in a modern form. With the Greeks hygiene became a science and has progressed from their day on.

The amount of knowledge accumulated in the past is enormous, no matter what may be said to the contrary, and historical nosography shows that it has bequeathed a large part of its treasure to modern medicine, because all that which is based upon observation is imperishable. But the ancients were not content merely to observe; they wished to rise to a conception of the nature of disease, yet they could not resist the temptation prematurely to systematize. The history of medical doctrines is that part of the history of medicine which shows the greatest fragility, fluctuations and successions of the various systems. Although the facts have remained unshaken, all the older theories have crumbled away. This could not have been otherwise, because the essential foundation, namely physiology, did not exist, and the physical sciences were in their infancy. One can appreciate impartially these ambitious efforts only if he places himself in the intellectual environment of the time; so the study of the history of medical doctrine can only be carried on by keeping account of the relationship of medicine with all the sciences.

Today the science of man in the normal state forms the basis of pathological research, but anatomy and physiology were only acquired late in the development of the healing art. This, of course, is natural, because in the early days the first requisite of the physician was to relieve suffering and to fight against death. At a later period he had more leisure to devote to study and pathology should have been his first preoccupation, and he was not long in discovering that it was vain to discourse upon the disturbances of an organism, of whose structure he was ignorant; and the desire seized him to know what was beneath the skin, what was suffering and what had become diseased. Besides being, as it is to us today, the end of natural existence, death had a solemn and mysterious character; religious terrors protected the remains of man who had lived; therefore the dissection of human bodies exposed the physician to punishment by death down to the middle ages and even later; dissection was a foolhardy act in days when capital punishment was applied to generals who had left the bodies of their soldiers unburied.

Yet the physician could not be content with the anatomical data derived from the executioner or priest; the induction derived from the examination of animals' entrails were insufficient to satisfy the minds of learned men. It is, however, doubtful whether or not the first anatomists had any other means to information; neither Aristotle nor Hippocrates had ever opened a human body, and the teaching of human anatomy was first carried on at the School of Alexandria by Erasistratus and Herophilos.

As has already been said, physiology could only be developed at a late date and necessarily is far more recent than anatomy as a science. Unquestionably it had a beginning in the distant past but it did not form a body until modern times; Harvey and Lavoisier are the two great names which mark the beginning of its vigorous growth. Therefore for many centuries medicine was deprived of this important branch, but it must not be supposed that physicians resisted the invincible temptation to explain the phenomena of life. But in the absence of a positive physiology they created an imaginary, which was modified according to need and to the trend of the philosophy of the times.

We may therefore conclude that the utility of medical history resides in the fact, as Littré pointed out a century ago, that "there is nothing in the most advanced contemporary medicine whose embryo cannot be found in the medicine of the past," and this statement is as true today as when the great French medical historian uttered it.

Teeth in Olden Times*

THE HONORABLE WILLIAM RENWICK RIDDELL, LL.D.
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(*Continued from page* 549)

But before this there was much progress from the earlier practice. Filling with lead (plombage) and artificial teeth were not uncommon—it is said that Henry IV, Henry of Navarre, paid twenty sous a month for dentists' care of his teeth, and there is an account still extant for "gold to fill (plomber) the King's teeth" (27). But gold was not often used: Ambrose Paré recommends cork and lead, and the use of lead was so common as to give rise to the word *plombage* for filling generally. Prosthesis, too, had reappeared in the sixteenth century.

Paré advises: "When they fall out, others should be fitted in, of bone or ivory or shark's teeth which are excellent for that purpose and which are to be tied to other neighboring teeth with gold or silver thread" (28).

Nor were full sets of artificial teeth unknown: they were not extremely useful, indeed, being rather for show than for mastication. One Court lady, we are told, had a set of teeth of the seawolf (*loup marin, Labrax lupus*)—"She removed them when eating but she replaced them to speak more easily and that cleverly enough. At the table when others were talking, she removed her set of teeth and hurried to eat; then she replaced her set to unload her budget" (29). A satirical writer informs us in 1605 that "many . . . had artificial teeth which they removed before seating themselves at the table" (30). It would appear that the manufacture of false teeth was in the hands of the turners (tabletiers). Some of the practitioners claimed more success in their work. We are told of Catalan of the Rue Dauphine, who "Will make you a complete set with which you will masticate all foods without discomfort and without effort"—this was late in the eighteenth century. At that time it is said that ivory, human teeth, teeth of cattle and walrus were almost exclusively employed: and one practitioner advertised (in 1786) that he had discovered springs made of gold to hold as firmly as possible the artificial sets of teeth for mastication and talking. "These sets of teeth are shaped to imitate nature and to make all the movements of the mouth without being liable to break—they serve, especially in the absence of natural teeth, for trituration of the food—that, as is well known is the foundation of the whole animal economy" (31). Even those in high station did not always have sets of teeth—Madame de Maintenon in 1714 writes: "I can scarcely see, I hear still worse and I am no longer understood because pronunciation is gone with the teeth" (32).

The transplantation of teeth, the immediate replacement of a carious tooth by a sound human tooth, although doubted by Ambrose Paré, is said to have been successfully practised thirty years later, in 1615, by Dr. Louis Guyon—this, however, was again a century later doubted by Dionis (33).

Let us now leave this field and see what were the officinal medicines: for that end, we are not driven to conjecture, gossip or tradition.

Moses Charas in 1673 published at Paris his *Pharmacopœia.* In 1753 Louis-Guillaume Lemonnier, afterwards one of the Royal Physicians of Louis Quatorze, Louis Quinze and Louis Seize published at Lyons an improved edition in Latin and French which was translated into all the languages of Europe and even into Chinese. This is a perfect mine of lore pharmaceutical and is undoubtedly reliable (34).

I gather from this *Pharmacopée Royale* some flowers of dental significance.

For toothache, Agaric Troches are recommended: take two drachms of white ginger contused, four ounces of white wine, half a pound of choice agaric in powder—make troches according to the rules of the art (35). This was a wondrous medicine, good for stomach, kidneys, liver, spleen and uterus; it cured headache, pains in the eyes, ears and teeth—besides killing worms.

Cynoglossus pills were very efficacious: take six drachms of choice myrrh, five drachms of the root of olibanum, half an ounce of each of dry cynoglossus root, seed of white hyoscyamus, and extract of opium, and an ounce and a half of each of saffron, castoreum and gum styrax (36). These are much esteemed for fluxions from eyes, teeth, etc.; and to facilitate slumber by allaying pains.

But the real thing for toothache is the Oil of St. John's wort, *Oleum hyperici*—take two pounds of the top flowering leaves of St. John's wort approaching maturity, bruised, four pounds of olive oil, half a pound of generous wine, two pounds of Venice turpentine, three ounces of tincture of saffron (37). This makes a balsam for pains in the joints, for sciatica, gout and even for toothache. That it heals all kinds of wounds (even those of the nerves), burns, etc., of course follows: but then "it is good also for worms and convulsions" when applied externally.

Then there were the *Pilulae sine Quibus,* pills without which one should never be found. Take fourteen ounces of the extract of Socotrine aloes, prepared with the juice of white roses, six drachms of diacridium, half an ounce of each of the whitest agaric, choice rhubarb and cleaned senna leaves, a drachm of each of red roses without the stem, the tops of absinth, seed of violets, dodder and mastic. Make pills (38). These pills are splendid purgatives and "are strongly recommended in diseases of the head and particularly in those of the ears and eyes they are taken fasting after the first sleep or in the morning."

Dentifrices were not unknown. Apparently there was not the variety we now enjoy, in fact I find only three, being Pulvis Dentifricus, Nos. 1, 2 and 3 respectively.

For Pulvis Dentifricus, No. 1, take one ounce of each of root of Florence iris (i. e., orris root), pumice stone and stag's horn calcined, prepared red

*Read before the Academy of Dentistry, Toronto.

coral, sepia bones, and cream of tartar, all very finely pulverized; half a scruple of each of oriental musk and civet and two drops of each of distilled oils of rosewood, cloves and cinnamon—this may be mixed in a marble mortar with equal parts of syrup of mulberries and kermes to make a paste (39).

The author says, "I know that there is no want of powders or pastes for cleaning and whitening the teeth; but I can assure you that this recipe is very good whether it be used in powder or in paste; for in addition to cleaning and whitening the teeth, it also prevents decay and stabilizes them."

Pulvis Dentifricus, No. 2, is simple: Take two ounces each of tears of dragon's blood and burnt common alum, finely pulverized; and four grains of oriental musk—this may also be made into a paste with the same syrup. "The use of this composition whether in powder or in paste is to rub the teeth gently evening and morning or even every hour if desired" (40).

For Pulvis Dentifricus, No. 3, take half an ounce of each of calcined pumice stone, white coral, sepia bone and cream of tartar all prepared on a porphyry slab, and orris root finely pulverized; one drachm of sal ammoniac similarly pulverized, three grains of each of oriental musk, and ambergris (41), "this powder is also very good for cleaning and whitening the teeth. It is used either in the state of powder or better, mixed with syrup of coral or dry roses or rose-honey and then it is made into a paste before scrubbing the teeth." This rose honey, Mel rosatum, made of dried red roseleaves and very white honey, was used by itself to clean and whiten the teeth. We may close our account of this work by extracting the formula for a balsam to promote the growth of the teeth in children; it is called the Balsamum ad puerorum dentitionem but there is no restriction of its use to *pueri,* boys; and no doubt it was equally beneficial to the dentition *puellarum,* of girls.

Take three ounces of unsalted May butter, two drachms of each of hen and duck fat; two ounces of each of the juice of river crabs, contused, extracted by cornflower water, also of mucilage of marsh mallow; four ounces of pulverized sugar candy; the yolk of an egg, and six grains of musk and of ambergris, mix and make a balsam (35). You crush two or three live river crabs in a marble mortar with a wooden pestle, moisten them with a little cornflower water and then press out two ounces of fluid; prepare two ounces of the mucilage of marsh mallow root, put the whole into a vessel of glazed earth with three ounces of May butter, two drachms of chicken fat and as much duck fat, cover the vessel and heat at a slow fire till the fluid almost disappears; then strain through linen, add (without fire) the yolk of an egg with the sugar candy, the musk and the ambergris finely powdered and the balsam is made (42).

It is a tried and approved preparation "for softening the gums of small children when their teeth are ready to come out; and the nurse should take care to anoint them with it often. Its use is very handy for, not being disagreeable to the children, it cannot hurt them if they swallow it."

Leave we the Old World and come to the New.

Nicholas Monardes, a Spanish physician, was born at Seville in 1493, the year after Columbus discovered America or at least Islands off America: Monardes did not visit America but he investigated the medicinal properties of American plants and other materials introduced from the New World. He published a book at Seville in Spanish, 1565, with the title *Dos Libros de las cosas que se traen de las Indias Occidentales que Serven al uso me Medecina,* (Two Volumes Concerning Things Brought from the West Indies Which are Used in Medicine). This work (after being reprinted in 1569 and 1580 a third volume being added in the last edition) was translated into Latin by Charles Clusius or L'Ecluse, and published in one volume at Antwerp in 1574—this is the edition which I use (43).

I give the plants only which were used for the teeth; most of them had great efficacy also in the case of disease of the other parts.

The marvellous Tacamahaca from New Spain in addition to its other virtues, "allays toothache when applied to the teeth even if they are decayed: and if the decayed tooth be burned (cauterized) it will prevent further decay" (44).

The Caraña brought from the interior of the Continent by way of Cartagena and Nomen Dei cures everything that the Tacamahaca can cure and more quickly (45).

Then there was tobacco which a few years before that time, indeed, had been brought to Spain, "rather for the ornamentation of gardens, than because of its qualities; but now it is very much more noted for its qualities than its beauty." It would be impossible to enumerate all its wondrous medicinal virtues, but the enthusiastic author can say: "Not only does it terminate pain of the teeth arising from a frigid cause the tooth having first been rubbed with a piece of cloth soaked in its juice and a little pill made from its leaf having been inserted in it; but it also checks decay so that it creeps no further" (46).

The fruit and other parts of a tree not named but described as being of the size of the ilex or scarlet oak with bark like that of the Cerrus Aeglyops or Turkey oak and leaves like the ash are much praised. "The teeth are stabilized by the powder rubbed on them and receding gums are healed" (47).

"Three years ago there was brought from Mechoacan province a certain root called *carlo sancto,* whose distinguished qualities they preach."

"This same plant when chewed helps receding gums and stabilizes the teeth: it also frees them from roughness and decay, and improves the breath: but after use, the mouth is to be washed out with wine to take away the bitter taste" (48).

"A few days ago the Bishop of Cartagena brought from the mainland of the New World the fruit of a tree from which dropped that tear which they call dragon's blood."

Among other qualities "it reunites recent wounds, it frees the gums from putrefaction and stabilizes the teeth" (49).

We can appreciate the great esteem in which the inhabitants of the Province of Quito held the teeth when we learn that "the inhabitants of this region are called guancanilcas and are toothless, for they have a custom to draw their teeth which they offer up to their idols, saying that the best should be offered to them and nothing is more distinguished for a man, nothing more necessary, than the teeth" (50).

Petrus de Osma et Xarayzeio writing to Monardes

from Lima, December 26, 1568, expresses the fear that the Indians had sacrificed to their idols a boy of their race because he had disclosed to the Spaniards where to find Bezoar (51) stones for "the Indians hold these stones as very valuable and offer them at the shrines of their idols which they call Guacas and they are accustomed to offer up other very valuable things such as gold, silver, gems, necklaces, animals and boys" (52).

Perhaps the modern dentist has now heard enough of these old time teeth: but I cannot refrain from adding something of the wonderful qualities of guayacan—our guaiacum.

Its use in the treatment of the *morbus gallicus* is well known: but its other virtues seem to have been obscured by time—anyway, Monardes tells us that "it stabilizes the teeth and whitens them if they are quite frequently washed with it," i. e., with the infusion or tincture (53).

NOTES

1. *Outlines of the History of Medicine.* . . . by Joh. Hermann Bass, M.D., Dr. Handerson's edition, N. Y., 1889, p. 15.

2. *odous,* genitive *odontos,* is, of course, Greek for a tooth. The compound of *odous* with references fill three folio columns of Stephanus' ponderous *Thesaurus,* vol. iii, coll. 3481 B-3484A.

3. Cicero, *De Naturâ Deorum,* Lib. iii, c. 22, enumerates three Aesculapii; the first was the son of Apollo and Coronis, "the bearded son of a beardless father" as the Greek wags called him; he discovered the *specillum,* the sound or probe for examining the depth of wounds, ulcers, &c., and was the first to bandage wounds. This is the God of Medicine. The second Aesculapius was struck by lightning and lies buried in Arcadia—the third, the son of Arsippus and Arsinoe *qui primus purgationem alvi, dentisque evulsionem, ut ferunt, invenit*"—"who was the first, so they say, to discover purging and tooth extraction." Cicero knew as much about such things as anybody—and that was not much.

4. After centuries of orgies of tooth pulling, and the sacrifice of millions of good serviceable teeth we are about back to the Greek idea. Dr. Box will save millions more—more power to his elbow!

5. We owe to Cælius Aurelianus (a celebrated Latin physician concerning whose period there is much uncertainty some placing him in the 1st century, A.D., and some as late as the 5th) the information that the lead forceps came from Erasistratus. See Cælius Aurelianus, *De Morbis Chronicis,* Haller's Edition, Lausan, 1774, Vol. ii, p. 135—the passage is part of Aurelianus' *Chronicles,* lib. ii, c. 4. The passage is given verbatim in Du Cange's *Glossarium Mediae et Infimae. Latinitatis,* Vol. ij, p .802, *sub voc Dentiducum*—I extract the substance: *"plumbum odontagogum . . . apud Delphos in Apollinis templo ostenationis causa propositum quo demonstrature oportere eos dentes auferri, qui sint faciles, vel-mobilitate laxati, vel quibus sufficiat plumbei ferramenti conamen ad summum."*

The dentiducum for drawing teeth was also called *forfex dentaria* or in late Latin *dentaria—"ferrum unde Medici dentes tollunt."*

Erasistratus of Iulis in Cos lived in the 3rd and 4th centuries, B.C., in Antioch and Alexandria. His most famous medical feat was the diagnosing of the puzzling illness of Antiochus, son of King Seleucus Nicator, as being love for Stratonice his stepmother: he got a fee of one hundred talents (say one hundred thousand dollars). He rejected Hippocrates, discarded bleeding and purgation and was the prototype of Hahnemann in his theory of the powerful effects of the smallest doses of medicine: he invented a catheter and just missed discovering the circulation of the blood—had it not been for the old theory of *pneuma* he probably would have done so.

6. See Hippocrates, *Peri Pathon:* De affectionibus, Sec. 4. It should be said, however that there is much doubt whether Hippocrates really wrote this book—it will be found in Kuhn's useful edition, vol. ii, p. 380, Littré's splendid edition has this in vol. vi, p. 213. I find in Hippocrates' celebrated *Aphorisms* only three references to the teeth, I translate.

Aph., iij, 25.

At the time of dentition there is pruritus of the gums, fevers, convulsions, diarrhea and particularly when they are producing canine teeth. . . .

Aph., v, 18.

Cold is harmful to the bones, teeth, nerves, cerebrum, spinal marrow; heat is beneficial.

Aph., iv, 53.

Fevers become more acute in those around whose teeth viscous matter forms.

7. *Cum sis ipsa domi, mediaque ornere Suburra*
Fiant absentes et tibi, Galla, comae;
Nec dentes aliter quam Serica, nocte reponas
Et jaceas centum condita pyxidibus
Nec tecum facies tua dormiat; innuis illo
Quod tibi prolatum est mane, supercilio
. . . . . .

Martial, Epig, ix, 38.

"When you are at home, doctor yourself up with paint and powder, leave off the wig, too—lay aside at night your teeth no other wise than your silk garment and throw a hundred secret things in their boxes—and don't let your own face sleep with you—beckon with that eyebrow which is brought to you in the morning" (out of the box). The rest of this scurrilous Epigram, I do not copy even in the decent obscurity of a learned language—it is too vile for even the Delphin editors to paraphrase. The lady did not wear silk pyjamas—she, like all others till a few generations ago, lay "in naked bed."

Who Galla was does not appear: and the commentators do not help us—she seems to have been just "that d—— Frenchwoman."

8. *Nostris versibus esse te Poetam,*
Fidentine, putas, cupisque credi?
Sic dentata sibi videtur Aegle
Emtis ossibus, Indicoque cornu:
Sic, quae nigrior est cadente moro
Cerussata sibi placet Lycoris.
Hac et tu ratione, quâ Poeta es,
Calvus cum fueris, eris comatus.

Martial, Epig., lib. j, 73.

These Fidentinus, Aegle and Lycoris are all unknown to fame.

9. So says Cicero (or whoever was the author of *De Legibus*) lib. ij, c. 24.

10. *Auro cum iis qui bene haerent vinviendi sunt*—"they are to be tied with gold to those which are holding fast." Celsus, *De Medicina,* lib. vij, c. 12 (1).

11. See as to Celsus, Bass, *op, cit.,* pp. 161, 162; he was the father of mediaeval medicine. Apparently the Hindus and Egyptians long before this time "attempted to replace lost teeth by attaching wood or ivory substitutes to an adjacent sound tooth by means of threads or wires; but the gold fillings reputed to have been found in the teeth of Egyptian mummies have . . . been shown to be superficial applications of gold leaf for ornamental purposes." *Encyclopedia Britannica,* 11th Ed. *sub voc.* Dentistry. Our colored brethren and sisters still have a fondness for gold teeth—a failing not wholly unknown in the white races.

12. Much of the information in this part of the paper is derived mediately or immediately from Alfred Franklin's entertaining series *La Vie Privée d'Autrefois*—Paris, 1894. There is no pretence here of originality, and I trust that this general acknowledgment may make it unnecessary to specialize. I have verified quotations and statements wherever possible. The "gargarisme" is given in *Le Menagier de Paris,* Paris. 1393, vol. ij, p. 25.

13. The Royal Dentist was Guillaume Coureil: Francis died of syphilis—but that is a matter of detail.

14. Within half a century I have known in Ontario a family of French Canadian origin use the same dentifrice: and I am assured by one who should know that this custom still prevails among the peasants of Normandy.

15. Laurent Houbert (1529-1583) was Chancellor of the famous medical school of Montpellier. It is said that of his work *Erreurs populaires au fait de la Médecine et Régime de Santé,"* 6000 copies were sold in six months: his most revolutionary doctrine was that a foul smell was not conclusive evidence of putridity. He did not—as he might—cite our skunk!

16. See Brantôme's *Oeuvres.* (1740), Vol. viii, p. 13. Pierre de Brantôme (1540-1614) is a celebrated French chronicler.

17. A letter from Gui Patia to his friend and pupil Noël Falconet, June 19, 1661. Gui Patin (1601-1672) a French physician (and also wit and free thinker) a friend and pupil of Riolanus, graduated M.D. in Paris, 1627, and practised in that city all his professional life, becoming Dean of the Faculty and Professor of Medicine. He was a determined enemy of antimony and chemical medicine generally. He was the first to note a case of tubal pregnancy, which he attributed to a straying of the ovum. A great scholar and humanitarian, his chief consolation on his death bed was that he would meet in the other world, Aristotle, Plato, Vergil, Cicero and his beloved Galen.

Noël Falconer (1644-1734) of Lyons was a pupil of Patin's but was of the opposite school, an Iatrochemist and a thoroughgoing follower of Sylvius.

18. So says the surgeon, B. Martin, in his *Dissertation sur les Dents,* Paris, 1679, p. 64.

19. N. de Blégny; *Le livre commode pour 1692,* vol i, p. 172, vol. ii, p. 178.

20. J. B. Thiers; *Traité des superstitions,* Paris, 1697, vol. i, p. 375.

21. Dr. Th. Sonnet de Courval; *Satyre contre les charlatans et pseudomédecins empyrigues,* 1610; see pp. 107, sqq.

22. *Les secrets du Seigneur Alexis:* Paris 1691, p. 351. Seigneur Alexis was Girolamo Ruscelli, who died 1566.

23. Madame Fouquet; *Recueil de remèdes faciles et domestiques,* 1678, p. 73.

It may be of interest to note here that Dubois, the exodontist charged with drawing the teeth of Louis Quatorze, used for that purpose an *elevatoire* of new invention. We are not told of what material that instrument was made though Dionis praises it almost fulsomely. But Dionis does say of the instruments used for cleaning the teeth that while such instruments are usually of steel, those made use of for the King and the Princes are of gold—"and if there had been a still more precious metal it would have been used for them, because they pay magnificently." Let all dentists, and especially "scalers", take notice!

Dionis, *Cours d' Operations de Chirurgie,* Paris, edit., 1714, pp. 512, 519.

Charles-Arnault Forgeron, dentist of King Louis Quatorze with the title "Surgeon-Operator for the Teeth," had an annual salary of 2295 livres (about equivalent to seven thousand dollars at the present time); he filled the same office for the Dauphin and Dauphiness receiving one thousand five hundred livres (say five thousand five hundred dollars of present time value). His duty was to clean and cut the teeth and to furnish roots and opiates when the King washed out his mouth. Trabouillet, *Etat de la France pour 1712,* vol. i, p. 178. The King had an opening in his upper jaw through which every time he drank or gargled carried the water into his nose: the hole was made by a shattering of the jaw drawn with the teeth—it became carious and sometimes ran caries with an evil odor. Dubois used no other remedy than the actual cautery with a red hot iron and effected a radical cure. *Journal de la Santé de Louis XIV,* pp. 162, 164, 294.

(The word which I translate "shattering" is *eclatement;* it is now obsolete and seems to have been used generally of outcry, &c.). Louis Quatorze had bad teeth anyway: from 1685, thirty years before his death, he had hardly any in the upper jaw and those in the lower jaw were carious—when he had toothache, d'Aquin, his physician, used essence of cloves and of thyme; when an abscess formed, a cataplasm of bread crumbs was applied; if an operation seemed necessary, the surgeon and dentist were consulted and the dentist operated. Op. cit., pp. 135, 140, 160.

24. Peter Dionis, born in Paris, was lecturer in surgery and anatomy in the Royal Gardens at Paris, an office founded by Louis Quatorze, which position he held till his death in 1718.

The work referred to in the text is his *Cours d'operations de Chirurgie demontrée, au jardin Royal de Paris, Paris,* 1707, which has been frequently reprinted and translated into nearly all the modern languages. He wrote a monograph on *Epilepsy,* was the first to emphasize the effects of rickets in the pelvis and had some part in advancing scientific dentistry. See p. 521.

25. Including one for syphilis described as "a radical cure for all the most characteristic of the secret diseases without keeping bed or room, by Sieur Grand-Thomas, formerly surgeon in the Royal Hospital, tried under the eyes of Messrs. Fermelhuys and Lemery, doctors-regent in Medicine of the Faculty of Paris, without frication or salivation."

26. Louis, Dauphin of France, who married Marie Joseph of Saxony and by her became the father of the future Louis Seize: he died in the lifetime of his father and never became King.

27. The price was fifteen liv. fifteen sols, intrinsically about three dollars, equivalent to sixty dollars now.

28. Ambrose Paré, born 1509 or 1510, died 1590, originally a barber, was in reality the father of modern surgery; he substituted ligature for boiling oil to close the arteries in amputations, and contended for the uselessness medicinally of mummy and unicorn's horn—he performed herniotomy for strangulated hernia and reprobated the practice of emasculation as a radical cure for hernia, was the first since ancient times to employ the truss habitually, he recognized fracture of the neck of the femur and induration of the prostate, &c., &c.,—in short, it is not too much to say that he revolutionized surgery. He was Royal Physician to Henry II, Francis II, and Charles IX, the story of his having been protected by the last named by being hidden under the Royal bed on the night of the St. Bartholomew Massacre is probably untrue, as he was a Roman Catholic. The references are to his *Oeuvres,* 1573, pp. 612, 805.

29. Talleyrand des Reaux, *Historiettes,* vol. ii, p. 346, tells us this of Mlle. de Gournay, *"la fille d'alliance"* of Montaigne—the last sentence contains a delightful pun. *Râtelier* means either a rack or a "set of teeth"—*râtalée* means a rakeful; the lady is said to have replaced her râtelier to speak her râtelée—elle remettoit son râtelier pour dire sa râtelée."

30. Artus d' Embry in his satirical work, *Description de l'Isle des Hermaphrodites,* Paris, 1605, p. 105.

31. See Alf. Franklin. *La Vie, Privée d'Autrefois, Variéties Chirurgicales,* pp. 171, 172,, *Affiches, Annonces et Avis Divers,* December 29, 1780, p. 201.

32. A. Geoffroy, *Madame de Maintenon d'apres sa Correspondance,* vol. ij, p. 352.

33. Ambrose Paré, *Oeuvres,* p. 611. "That I have heard told, but I have not seen it: and if it is true, it may well be" —which sounds like a truism.

Louis Guyon, *Le Mirour de la Beauté et Santé Corporelles",* Paris, 1615, p. 369.

Dionis, *Cours d'Operations de Chirurgie,* 1714, p. 523.

Those authors are however speaking more particularly of the immediate replacement in the alveolus of a tooth drawn in mistake for another.

34. Moïse (Moyse or Moses) Charas was born in Languedoc in 1618 and followed his profession as apothecary at Orange and later at Paris. Being a Calvinist, he was forced to leave France in 1680—he went to England, then to Holland, then to Spain to attend Charles II. Disputing the contention of the Court physicians (firmly believed in by the Spanish people of the district) that the vipers for twelve miles around Toledo were harmless ever since they had been deprived of their poison by the fiat of a famous Archbishop, he fell into the hands of the inquisition, whence he escaped only by abjuring his Protestantism. He returned to Paris, 1690, where he lived until his death in 1698.

Monnier or Le Monnier or more correctly Lemonnier is known only by this work—he modestly hides his identity under initials describing himself on the title page as "M.L.M. de l'academie Royale des Sciences et Docteur en Mèdecine de la Faculté de Paris." The work was published *"avec approbation et privilege du roi,"* the license being dated seven years before publication, July 16, 1746. He was not yet Royal Physician. See Alfred Franklin's *La Vie Privée, Les Médecins,* p. 169.

35. ℞ *Zingiberis albi contusi, drachm, ij, Vini albii unc. iv. Agarici electi in pulverem redacti, libr. s. Fiant ex arte trochisci,* p. 277.

36. ℞ *Myrrhae electae drachm, vj, Olibani, drachm v. Radicis cynoglossi siccae, seminis hyoscyami albi, extracti opii, ana, unc. s. Croci, castorei, resinæ stiracis, ana drachm. js.*

37. ℞ *Summitatum hyperici floridarum, ad maturitatem vergentium, contusarum, libr. ij. Olei communis, libr. iv. Vini generosi, libr. s. Terebinthinæ Venatae libr. ij. Croci tincturae, unc. iij.* Venetian Turpentine was not a turpentine but a compound of many drugs.

38. ℞ *Extracti aloes soccotrinae cum succo rosarum pallidarum parati. unc. xiv. Diacridii, drachm. vj. Agarici albissimi, rhabarbari electi, foliorum senae mundatoryn, ana unc. s. Rosarum rubarum exungulatarum, summitatum absinthii, seminis violarum, cuscutae, mastiches, ana, drachm j. Fiant pilulae.*

39. ℞ *Radicis ireos Florentinæ, lapidis pumicis et cornu cervi ustorum, coralli rubri praeparati, ossis interioris sepiae et cremoris tartari, tenuissime pulveratorum, ana, unc. j. Moschi orientalis zibethi, ana, scrup. s. oleorum ligni rhodii, caryophyllorum et cinnamomi, ana, gutt. ij.*

The root of the Florentine iris is our orris root; Zibethum orientale is from the civet and is so called to distinguish it from *sibethum occidentale, i. e. stercus humanum,* from the superior animal. Kermes is the dried body of the female of a species of insect not unlike the cochineal, which grows on several species of oak in the basin of the Mediterranean; they were long thought to be berries. What the French call *Kermes du nord* or *Kermes de racines* are red berries. And there is a Kermes mineral; but the insect is here meant. The rosewood here named is not our rosewood, but the odorous wood of two species of Convolvulus, native to the Canary Isles; the famous English herbalist Culpepper recommends it to "encrease milk in nurses."

40. ℞ *Lachrymarum elegantium sanguinis draconis et aluminis romani usti, subtilissime pulveratorum, ana, unc. ij. Moschi orientalis, gran. lv.*

41. ℞ *Lapidis pumicis usti, corodli alni, ossis sepia et cremoris tartari, supra porphyrium praeparatorum et radicis ireos Florentinae subtilissime pulveratae, ana, unc. s. Salis ammoniaci similter pulverati, drachm. j. Moschi orientalis et ambrae grisae, ana, gran, iij.* The "porphyry" or "porphyvium" was a porphyry slab used by apothecaries for pulverizing and mixing their drugs.

42. ℞ *Butyri mayalis non saliti, unc. iij. Pinguedinis gallinae et anatis, ana, drach, ij. Succi cancrorum fluviatilium contuso um cum aqua florum cyani extracti et mucilaginis radicis altheae, ana unc. ij. Sacchari candi subtiliter pulverati, unc. iv, Vitellum unum ovi. Moschi et ambrae griseae, ana, gran. vj. M. f. balsamum.*

The *cyanus* whose flowers are used is the *Centaurea cyanus,* the common blue cornflower sometimes called the bachelor's button, blue bonnet or blue bottle; it grows very commonly in wheat and is often cultivated.

43. I owe to the kindness of Dr. J. H. Elliott of Toronto, the opportunity of examining this edition. The title is *De Simplicibus Medicamentis ex Occidentali India delatis. quorum in Medicina usus est.* Auctore D. Nicolo *Monardis Hispalensi Medico, Interprete* Carolo *clusio, Atrebate / Antverpiae. Ex Officina Christophoro Plantim,* Architypographi Regii, M.D. LXXIII.

The work was reprinted in Spanish in 1578 at Burgos, in Italian in 1585 at Venice, in Latin in 1579 and in French at Lyons in 1602 and 1629, the French being a translation of the Latin by Anthoine Colin, an apothecary of Lyons.

Monardes was a physician practising in his native city of Seville; he wrote on venesection, the bezoar stone, the use and properties of steel and of snow in medicine. His name is perpetuated by the botanical Monarda in Linnaeus' Class Diandria—we have several species in Canada. Charles Ecluse or L'Ecluse, who Latinized his name to Carolus Clusius, was an eminent botanist, born in Arras, France, 1526; after graduating he travelled extensively, visiting England three times and also Vienna. In 1593, he became professor of botany at Leyden and continued in that position until his death in 1609. He had all kinds of physical suffering, fevers, dropsy, fracture of right arm and leg, dislocation at the age of sixty-three of his right thigh so that he became incapacitated from walking, calculus, colic, hernia—we are not told that he had toothache, but it is likely he must have.

44. *Dolorem dentium sedat, dentibus, etiam corruptis, imposita; atque si hac dens corruptus ustuletur, prohibet ne corruptic longius serpat.*

"Ustulo," "to burn, scorch," is rare in classical Latin; it sometimes means "to crisp the hair"; in mediaeval medicine, it meant burning with the "ustura" "fer chaud," actual cautery. "Ustura" was also one of the names given to the Carbuncle.

The Tacamahaca gum seems to be of different trees: the description given of the tree fits the Mexican tree *Bursera (Elaphrum) tomentosa;* but the gum came also from other Burseras and the kindred *Protinum.* The name Tacamahac is now generally applied to the Balsam-Poplar, *Populus balsamifera.*

45. *Ad eosdem morbos laudatur quos Tacamahaca curare solst et minore tempore spacio vires suas exerit.*

The Caraña or Caranna is from the *Bursera acuminalis* of the Natural order, Amyridacaea. Phillips, (1678-1706), says of it: "Caranna, a gum coming from the West Indies, good for the Tooth-ach if applyed to the Temples." N.E.D. *sub voc.* "Carana."

The gum is described as like the Tacamahac but brighter, more fluid and heavier.

46. *Dolores dentium a causa frigida non modò sinit dente prius deterso aliquo linteo eius delibuto, et pilula ex eius folio confecta denti indita, sed etiam ne corruptio serpat, prohibet.*

47. *Dentes eodem pulveri fricati stabiliuntur, gingiuae abscedentes sanantur.* This tree grows only in one Province and is described in a letter to Monardes by Petrus de Osma et Xarayzeio from Lima, Peru. December 26, 1568.

48. *Idem commanducatus, gingiuis abscedentibus auxilio est, dentes stabilit, eosque a scabritia et corruptione liberat, orisque halitum commendat, sed postea vino os eluendum, ad amaritudinem tollendum.*

Dunglison, Dictionary of Medical Science, p. 175, says: "Carlo Sancto Radix, St. Charles Root, found in Mechoachan. The bark is aromatic, bitter and acrid. It is considered to be sudorific and to strengthen the gums and stomach."

49. *Vulnera recentia glutinat, gingiuas a putrefactione liberat et dentes stabilit. "Glutino,"* properly "to glue," is the regular medical term for closing up or uniting a wound; it is used in this sense by Celsus, who speaks of *"glutinantia medicamenta"* (VII, 4); and by Pliny, who has *"cicatracibus glutinandis" 32,* 6, 35, par. 105—see also Celsus, VII, 27, 28: Pliny, 25, 5, 19, par. 43. The French, as Dr. Dunglison says, Med. Dict., *sub voc.* "Agglutinate," use the word "agglutiner" in the sense of "to reunite." He does not seem to be aware that the word "glutinate" was used in English in the same sense—cf, "glutination," "glutinative."

Dragon's Blood is well known in drug stores.

50. *Guancauilcas vocantur cius regionis incolae et edentudli sunt, quoniam pro mori habent vt sibi dentes eximant, quos, suis idolis offerant, dicentes optima quaeque eis offerri debere hominem autem nihil praestantius, nihil magis necessarium dentibus habere.* I fancy all will agree on this estimate of the value of teeth—even if they would prefer to keep them in their mouth rather than lay them on the altar.

51. Bezoar stones are stones, calculi, found in the stomach of certain goats or deer—in America of other ruminants—they had a great name as a cureall though practically inert—they do not differ in origin from those sometimes found in the cow.

Petrus de Osma et Xarayzeio in his letter to Monardes tells of a hunt he had taken part in in June, 1568, for animals with the Bezoar stone. I translate somewhat freely:

"The form of the animal from which the Bezoar stone is obtained you have described in your book. Having made diligent inquiry we found a certain kind of animal frequenting these mountains very similar to the goats—except that they are without horns—which you say are found in East India. They are reddish in color for the most part and feed on healthgiving plants (of which there is great plenty in the mountains where these animals feed), and are so fleet that we could get them only by gunshot.

On the 25th of the present month of June, 1568, I with some friends went out to hunt on the mountains of this region: we were five days hunting and killed some of these animals of which I have spoken; as we had undertaken the hunt for them, we carried along your book.

Having made a large opening we found no stone, even in those of advanced age either in the stomach or in any other part of the body; from which we inferred that they were not similar to the (East) Indian animals. The Indians whom we had taken with us as servants being closely questioned in what part of the body these animals had the stones, said that they knew nothing about such stones (as they were most hostile to us and did not wish to disclose their secrets to us). But an Indian lad ten or twelve years old, when he saw us so anxious for this information showed us a certain receptaculum, like a pouch in the animals, in which they received the devoured herbage and after it had been ruminated sent it into the stomach. The Indians wanted to kill the boy then and there because he had shown it to us; and afterwards when we were busy hunting, they caught him and as we learned sacrificed him. The Indians set a great value on these stones and are accustomed to offer them up at the shrines of their idols which they call *Guacas*—they also offer other their most precious possessions as gold, silver, gems, necklaces, animals and boys.

(To be concluded)

Editorial Articles

ATHLETICS AND HEALTH

Athletics have been coupled, by many apologists, with the promotion of health and physical vigor. It would have been correct to say that it is the natural outcome of the possession of health and vigor, but no one can establish the first thesis on any sound basis of fact or analogy.

Athletics carry with them the idea of competition, and we go into such competitive contests either for pleasure or for financial profit. It may be that these results may possibly conduce indirectly to health and it may not—it all depends on the athletics and those who take part.

Athletics are peculiar to man, as wild animals never take to Marathon races and, in fact, keep in the best of health not by taking exercise but by letting exercise take them.

In many colleges the football, baseball and other teams are nominally a part of the physical education régime. Prominent physical directors have, however, inveighed against the policy of spending heaps of money for coaching, clothing and feeding these teams. It seemed to reflect on their own efforts at improving and maintaining the health of the rank and file of students. There is no doubt about the enormous outlay in this direction, but it is time that all concerned should divorce the college athlete and his performance from the health education work of the school, for they do not belong there, even if they happen to be under the supervision of the department of physical education and are housed in the nominal house of health—the gymnasium.

The significant expression, "we are not in this business for our health" applies literally to the members of the teams which face each other on the gridiron or basketball courts. They are in to win, for the pleasure that comes with the consciousness of either having won or of having done one's best to win. Possibly they appear, and often are, at this time in the pink of condition so far as brute health and physique are concerned, but they were selected because of the presumed possession of health and strength and they are little better than they were before training; besides, they know, and everyone else knows, they will soon lapse into their former, or a worse, state. We are not here concerned with any mental or moral values which are said to attend athletic training and practice.

A certain small percentage of college youth are endowed with such a surplus of energy that they wish to take part in these contests because they enjoy the game. A very large percentage of college youth enjoy watching the game and exercising their lungs accordingly. The result is a highly exciting, staged spectacle with a large attendance and good gate receipts. Among the producers of this spectacle are a few who have a personal liking for the drama or for music, together with considerable talent and energy enough to survive a spell of coaching along these lines. They vie with each other to do their best. They give their spectacle (concert or play) and it is attended by many who are pleased according to the performance and their own emotional or mental receptivity and response. It takes good health and some effort to reach our limits of attainment in music or in acting, and our great executants in these arts are usually men of strong physique, though this is never mentioned and such practices are never excused as means of securing health.

Save that competition and the bodily effort put forth are apparent in the playing of games and not so evident in the arts in which expression is given through vocal cords or fingers, the functions are quite comparable. For playing, or interest in, football, however, our instincts are more primitive and more universal.

Attempts have been made to show that those who have taken part in college athletics are not a healthy class in afterlife, and there are statistics to show that they are just as healthy. What we ought to expect is that they would be more healthy, not for any training for, or indulgence in, athletics, but because of the superabundance of vitality which led them originally into competitive games. But such superabundance is likely to make one less careful and conservative of health in our modern modes of living than he who must perforce husband his bodily possessions from day to day.

When we come down from the high pinnacle of pugilism, professional baseball, and college major sports to the realm where a full pocketbook, fame, or the survival of a school do not depend on his efforts—down to volley ball, tennis, golf or croquet, the same conditions and causes for action hold good except in those cases where the pupil or the patient is driven to partake by some teacher or doctor who believes the exercise will be beneficial. Provided the games are agreeable, in no way exhaust the surplus of nervous energy and counteract the compulsion and inclination to find our work and our recreation in ways too sedentary and too confining to conform to our primitive bodily functions, they are undoubtedly healthful. It is here that the physical educator finds his field of usefulness, but toward

the athlete he can only be concerned in seeing that he does not come to more harm than is to be expected and to patch up his injuries to the best of his ability. That one of these athletes should, without further knowledge and training, set himself up or be set up to advise those who do not belong, physiologically or psychologically, to his own class, is an absurd state of affairs which, happily, is passing.

DISEASE AND LITERATURE

A short time ago a distinguished writer, Richard Le Gallienne, discussed the relationship between drunkenness and drug taking and high imaginative literary powers. That there is a relationship seems evident from looking over the names of some of those who have won a place in the first ranks of writers.

Edgar Allan Poe is the greatest of imaginative writers who was both a genius and a dipsomaniac. He was also the one who combined this wonderful gift with this unfortunate taint in the highest degree. He soared to the loftiest flights of imagination with the power of expressing them in the most apt and beautiful language and sunk to the lowest depths of mental and social degradation. Undoubtedly in the case of Poe it was a disease in that he had inherited a highly strung nervous temperament and was peculiarly susceptible to the influence of alcohol. He was a psychopath driven at recurring periods to drink alcohol to excess due to the reaction produced by the stress of mental effort.

Coleridge, though physically vigorous and strong, was of unstable temperament and sought forgetfulness of this world's worries and a transference into the world of dreams by indulging in narcotics.

De Quincey discovered his nepenthe in opium of which he had habituated himself to take prodigious quantities, but he lived to be more than eighty years old and almost to the last wrote fluently, logically and clearly.

Swinburne, up to a certain time of his life, drank freely, and so little did this habit interfere with his flights of imagination or of diction and expression that his loveliest poetry was written at this period of his career. Indeed, it has been said that when Watts Dunton succeeded in weaning him from this feeling that he, Swinburne, wrote nothing of note afterwards.

Le Gallienne probes the problem of the relationship between drinking and drug taking and high literary efforts from the aspect of its effect or influence upon the standard of the output, and appears to decide that the effect on the whole was favorable. From the point of view of disease and literature it seems likely that all the men mentioned, and they are but a few among the many of like mental gifts and perversions, were abnormal in mental makeup and in temperament. While not subscribing to the opinion of Max Nordau that genius is akin to degeneration, it does appear certain that many of the most brilliant literary men and women deviate from the normal, to an extent, sometimes allied to disease. There is truth in Dryden's line, "Great wits are oft to madness close allied."

However, there is one disease which does quicken the wits at the same time that it wastes the body, while the mental powers remain normal. Stevenson, Keats, Hood and probably Emily Brontë were among the conspicuous examples of how seemingly pulmonary tuberculosis does stimulate the mental faculties. No doubt the introspection of the invalid must be taken into consideration, the fact that the sufferer from tuberculosis or of other disease is precluded from taking part in those violent forms of exercise natural to the man physically sound, and that he or she must seek relief from the monotony of existence in mental exercise of some description. The powers of imagination fostered by introspection are afforded ample opportunities for expressing themselves and in literature these powers frequently find the necessary outlet.

These remarks may be applied to any form of disease that prevents the individual from leading the ordinary life of civilization or of following his bent in travel or adventure. But it has been asserted that pulmonary tuberculosis stands in this respect somewhat apart from other diseases, and that there is a something in the germ and factors which produce it that urge its victims to mental efforts of one sort or another, and as the choice is limited and writing is perhaps the easiest for them, to literature they turn. There is no disease in which the powers of the mind are clearer than in tuberculosis, and it is possible that the malady acts as a strong stimulant on the mind and the imagination.

A further question arises, are the writings of a diseased man healthy writings or are they not often the outpourings of a mind diseased? It is true that morbid fancies and unpleasant evidences of unhealthy sensibilities are exhibited throughout the books of sick men and women. Poe was morbid to an extreme degree and his imagination at times uncontrolled. Emily Brontë's writings for the most part consisted of almost incoherent sentences interspersed with flashes of true genius. It may be concluded that there is a relationship between disease and literature of the highest stamp, although it may be also said that at the present time there is a great deal of diseased socalled literature in which no trace of genius can be found. The evidence in support of a relationship between pulmonary tuberculosis and literary genius and talent is strong, but it must be borne in mind that having tuberculosis of course does not in itself confer genius.

or even talent, but may and apparently does stimulate the mental powers. The question as to whether genius or exceptional mental powers, especially those of the imagination, are more often present in the tuberculous than the normal individual is a moot one and is possibly worthy of further study. Although tuberculosis or any disease is not to be desired, it is perhaps well that in this material age there should be some who can exercise their vivid imaginations for the relief and relaxation of those who are compelled to lead a humdrum existence. Writing, too, is a compensation, to some extent, to the invalid for pleasures missed, and from the psychotherapeutic point of view affords occupation and provides a vent for some of the mass of emotional feelings which have collected during his long hours of introspection and threaten to surcharge his brain. It acts in a way similar to psychoanalysis.

MASTITIS IN THE MALE

In male subjects between eighteen and twenty-one years of age one not infrequently meets with a semi-physiological hypertrophy of the breast which sometimes is bilateral and must not be confounded with fibrous hypertrophy which is a far less common process. From the viewpoint of symptomatology, it will be found that one or both nipples have increased in size giving rise to pain which, at first, is indefinite, but later becomes shooting in character and increased by contact with the clothing to such an extent as to become almost intolerable. The breast may increase in size to the extent of those of a girl of sixteen. Palpation reveals a tumor varying in size from a walnut to an orange and firm to the feel. The centre of the tumefaction corresponds to the areola; the skin is freely movable over the tumor and the latter is not adherent to the underlying structures. Occasionally there is an appreciable hypertrophy of the regional lymphnodes.

Regardless of the oft expressed opinion, this mammary hypertrophy does not in the majority of cases coincide with atrophy of the testicles, and signs of degeneration or infantilism are never observed. On the other hand, some type of infection will be found to be the etiological factor in most cases, the mastitis developing after a severe form of influenza, measles, secondary syphilis, streptococcal infections of the joints or pulmonary tuberculosis. The mastitis does not go on to supuration and its prognosis may be regarded as benign.

As to treatment reliance should be placed on diathermy, heliotherapy, slight methodical compression combined with the usual treatment of convalescents from serious infectious processes and specific treatment when the subject is syphilitic. One must never expect *restitutio ad integrum*, because a slight hypertrophy will invariably remain. It may occasionally happen that excision of the tumor will be required.

ERUCTATIONS

"Take heed, Sancho, not to chew on both sides of thy mouth at once, and by no means to eruct before company." "I know not what you mean by *eruct*," quoth Sancho. "To eruct," said Don Quixote, "means to belch—a filthy, though very significant word; and therefore, the polite, instead of saying 'belch,' make use of the word 'eruct,' which is borrowed from the Latin; and from belchings they say 'eructations,' and though it is true that some do not yet understand these terms, it matters not much, for in time by use and custom their meaning will be known to all."

Works on diseases of digestion are most disappointing to the average physician and the more exhaustive they are the more disappointing. They contain a great many words about ulcer, cancer, and gastroenteritis and the like, a great deal about test meals and stomach examinations, but little about that most common of all ailments, dyspepsia. There is hardly mention of either belching or eructation or of discharges of gas from the lower end of the food canal and not much said about the troublesome gases which one would like to discharge but cannot.

If anything is suggested by the treatise by way of therapeusis for these annoying and sometimes distressing conditions, it is almost invariably some palliative which is assigned to the heroic task.

Man is the only animal given to eructation, though some of his domesticated friends become gas factories in proportion as they take in a similar sort of food. Fermenting food, whether in the receptacle near the beginning or the end of the food tract, means overwork of the chemical laboratories connected therewith, for it is inconceivable that such accumulations of gas can be normal. Ten to one the clinician prescribes hydrochloric acid or a digestive tablet when the only logical thing to do is to remove the needless task thrown on these organs of digestion. A fast of one meal or of a day makes a good beginning. The quantity of all kinds of food may not be too great, but the carbohydrates have been usually much overingested. While it is usually the Sanchos and those who "chew on both sides" that eruct, the Quixotes may also suffer occasionally from indigestion through an overconcern with the affairs of life. This psychic dyspepsia is more difficult to cure.

It is in the management of these cases of common everyday disorders of digestion that the average physician needs his knowledge of physiology and of nutrition and to exercise his commonsense. The whole pharmacopœia is not likely to be of much assistance to him or his patient.

Vanderbilt University's New $3,000,000 Medical School

GEORGE E. SIMMONS
Nashville, Tenn.

Deprecation of the antagonism which has sprung up between public health officers and practitioners featured the addresses by Dr. William H. Welch, director of the Johns Hopkins school of hygiene and public health, and Dr. Simon Flexner, director of the laboratories of Rockefeller Institute for Medical Research, at the formal opening here of Vanderbilt University's new $3,000,000 medical school, October 15, 1925.

Leading physicians and surgeons, together with scores of other educators, from throughout the United States and several foreign countries assembled here for the university's semicentennial celebration, of which opening of the medical school featured the first day.

Dr. Flexner and Dr. Welch addressed the medical conference, and were among those who inspected Vanderbilt's new school and hospital, as well as the school for nurses.

"There is nothing more disgusting to me than the antagonism which has sprung up between physicians and public health officers," Dr. Welch declared. "For the moment the matter is serious, although it is only a temporary episode and will pass away. The heart of the medical profession is sound, and I am sure this incident will pass over."

Dr. Welch, who represented also the National Academy of Sciences at the semicentennial celebration, congratulated Dean G. Canby Robinson of the new school, upon the arrangement and equipment of the Vanderbilt plant.

"Thirty years ago began a golden era for medicine," said Dr. Welch, "and this was especially emphasized in bacteriological work. The inspiration still exists today, but along new lines of approach to opening up the application of those discoveries. . . .

"Inspiration varies, but the highest type of research is occasioned by the desire to know the truth. Practical application is a good motive, but the highest motive is the discovery of truth in this vast exploration of nature.

"I believe in the emancipation of clinical medicine," he said. "The clinical laboratory problems are presented by living patients. Heretofore, clinical medicine has been too much under the domination of laboratory subjects."

Dr. Flexner, a research worker of wide fame, congratulated the university upon its new medical school and its opportunity for service to science.

"Such a preparation as this to serve science is an event of national if not international importance," he declared. It remains to be seen what assistance the city and state will give it—and I refer to spiritual rather than material assistance."

He contrasted nineteenth century medical study with the present day methods. In that era, he said, the study of medicine consisted largely in consultation of texts, but a new day has dawned, with its practical training in the hospital and its extension of knowledge through research. That more advanced method has become a part of the Nashville school.

George M. Vincent, president of the Rockefeller Foundation of New York, also took occasion to discuss the medical school at length. His address was delivered before the session of delegates Thursday night. He warned the men of science to be aware of what the public would think of them.

"This medical centre," said Dr. Vincent, "is part of a far flung system of university schools, which extends from Baltimore, Philadelphia, New York and Boston to San Francisco; from Montreal and Toronto to New Orleans. . . .

"This medical school, then, placed in the midst of a great region, manned by a well trained staff who

work under favorable conditions of housing, equipment and hospital facilities, is committed to the scientific method and is actuated by the scientific spirit. . . . Here the knowledge already available through the progress of medical research will be used for the healing of the sick, the teaching of physicians and the training of investigators. . . .

"But too much must not be taken for granted. The attitude of the American public towards science is often disturbing. The average citizen seems impressed by what are glibly called the marvels of mechanical progress. He reads of the wizards of invention. Science takes on an almost magical character. It is not easy for the public to carry over from mechanical achievement the idea of scientific method applied to the human body and mind. Too great an expectation of results is very frequently aroused.

"There is also a tendency to undue simplification, which encourages belief in bizarre cures and panaceas. The old frontier tradition still persists; the jack of all trades is extolled as the typical versatile American.

"It must be admitted that the man in the street is not wholly to blame if he is distrustful of specialists. The spectacle of experts in court testifying often in support of diametrically opposed ideas is not lost upon the public. . . . To abuse great groups of people for their attitudes and conduct is like upbraiding the weather. Sometimes Christians are twitted with failure to display the Christian virtues. Scientists are not free from a similar fault. The scientific spirit is calm, dispassionate, detached, objective, but they seem to forget that.

"By sympathetic comradeship with the medical profession, by occasional contact with groups of laymen, by social intercourse, by public address, the men and women of this institution may create a sympathetic appreciation of the aims and achievements, as well as the baffling difficulties, of modern medicine."

There was no expression of fear, on the part of academic leaders and notable educators visiting Vanderbilt University, that the medical school might overshadow other parts of the university within a few years. This fear was expressed last spring by the president of the university's board of trust, but apparently was not in the minds of those who took part in the formal opening of the medical school.

The new Vanderbilt school has an imposing four story brick structure—a group of buildings linked in a unit—with ample space for the hospital, class rooms, laboratories, library, offices and the like. It is the most complete and commodius, educators say, in this section of the country.

Dean Robinson, head of the school, is a graduate of Johns Hopkins University and a former professor at Washington University, St. Louis.

Philadelphia Meeting of the American College of Surgeons

On the first five days of the week beginning October 26th the American College of Surgeons held their meeting in the Hotel Bellevue-Stratford, Philadelphia. Some of its more distinctive features can be set down. An important conference was held on hospital standardization which was opened by the retiring president of the college, Dr. Charles Mayo. Dr. Franklin H. Martin, Chicago, director general of the college, presented the eighth annual report on hospital standardization. The report showed that while great improvement has been made in improving conditions of hospitals in this country, there yet remains much to be done.

On the evening of Monday, October 26th, the president elect, Dr. Rudolf Matas, of New Orleans, was inducted, Dr. Charles Mayo gave his address, Dr. Charles Nassau, of Philadelphia, welcomed the guests to the city of brotherly love, and Sir Arbuthnot Lane, the well known London surgeon, gave the Murphy oration. In introducing the English surgeon Dr. Matas compared the ideals and careers of Murphy and Lane, pointing out that they were both distinguished by originality of thought and execution. They were neither of them content to follow the beaten track, they not only improved existing surgical methods but devised new ones. Dr. Matas thought that they were, perhaps, the greatest surgeons of their generation.

Sir Arbuthnot Lane said, in part, that he felt and appreciated deeply the honor of being asked to give the Murphy oration. Like them all he loved that great, big hearted, generous man, who was so full of enthusiasm and energy. Though seriously handicapped by feeble health he never allowed anything to interfere with the work in which he took so much pride and interest that he thereby materially shortened his life. He, Sir Arbuthnot Lane, was very fortunate in making Dr. Murphy's acquaintance many years ago, owing to having obtained one of his buttons and having used it successfully six months before anyone in England. The case was published in the *Lancet* early in 1894. Learning of this Dr. Murphy, accompanied by his beautiful wife, called to congratulate him on the result he had obtained by the use of this most ingenious and useful device. How many lives that button had saved and how much it had stimulated surgeons to improve their technic was well known to all. It had proved to be one of the greatest advances in abdominal surgery. There were still conditions in which no other method could approach the Murphy button in usefulness. Up to that time the name of Murphy was practically unknown in Europe. Their friendship dated from that visit and he had always regarded it as a great privilege to have since had many opportunities of discussing surgical problems with one with whom he was entirely in sympathy. He was always so ready to take an active interest in any new problem on which

his fertile and active brain invariably cast some fresh light. He was essentially an original man, as well as being a superb teacher.

Sir Arbuthnot Lane knew, as did so many of his intimate friends, how much Murphy owed to the constant care and devotion of his charming helpmate, who seemed to possess the secret of perennial youth. While unable to control his indomitable will in the pursuit of science she did her utmost to provide him with the care and attention necessary to enable him to continue his arduous occupation. Not only did she look after his health but she took a very active interest in his surgical work. Although many years had elapsed, he could vividly remember her description of the manner in which the button was evolved and the anxiety and interest with which they both watched the result of its use in animals before employing it in the human subject. Her love and care played no small part in making Murphy's career the great success it was.

What struck Sir Arbuthnot Lane most in Murphy was his wonderful generosity, a quality which is so largely shared by other American surgeons. He was always most anxious to accord praise to others wherever it was possible and often avoided claiming for himself much original investigation work for which he was largely responsible. The excellence of his surgical work appealed to everyone, as also did his remarkable breadth of vision and foresight.

He possessed in a peculiar degree the power to hold and hypnotize his audience beyond that of any other surgeon he had met. He appeared to take possession of his hearers and to imbue them with a feeling that whatever he said was true. Few of them would forget his operations and his demonstrations in the theatre. Geniuses of the type of Murphy were not teachers in the ordinary sense in that they did not produce the like among their immediate entourage but, on the other hand, they exerted an immense and widespread influence upon the whole community. That was essentially the case with Murphy.

Sir Arbuthnot Lane spent much time with Dr. Murphy during that memorable conference in London in 1914, of which he was the distinguished president, when they had many conversations about chronic intestinal stasis in which he took an active interest and for which he foretold a great future. At that time not only did few people accept my views on this subject but the bitterness of the attacks of many members of the profession was characteristic of their usual attitude towards any ideas with which they were not familiar. Murphy was infinitely more practical. He saw a large number of such cases both before and after operation, he was present at many operations and he investigated the histories of these patients in his usual thorough manner. He was one of those who accepted my views and gave me hearty encouragement. He was also glad to remember that he took precisely the same attitude when the operative treatment of simple fractures was being opposed in the usual acrimonious manner.

After reading a portion of the last letter Sir Arbuthnot Lane received from Dr. Murphy, the speaker discussed at considerable length the subject of intestinal stasis but from the preventive viewpoint, arguing that it was a disease of civilization which could be avoided by living more simply in every way and especially so far as diet was concerned, that is diet from infancy up. Sir Arbuthnot Lane emphasized the point that the public must be educated as to how disease might be largely prevented by living properly and embraced the occasion to introduce to an American audience a new society which has been established in Great Britain to educate the public in the several principles which he has been teaching for years. He suggested that a similar society should be found in America called The New Health Society and dedicated to the memory of Murphy.

Dr. Matas in his presidential address fulminated against the quacks and charlatans who attempted to mulct a too credulous public. He said in part that with the central, communal hospital, staffed by a competent group of clinical and laboratory specialists, would come a safe resort for whoever might be in need of medical help and the demand for the family physician would cease. A new type of doctor would arise whose functions would still be those of an intermediary between patient and specialist, but who, apart from his classifying and diagnostic functions, would find his chief occupation as a sanitary adviser and public health officer. This outlook would probably be disputed, but coming events cast their shadows before, and there could be no doubt that this was the meaning of the shadow now seen.

Lord Dawson, of Penn, physician to the King of England, and one of the distinguished guests, in urging a hospital for every community no matter how rural, said that the family doctor should remain the foundation of medical service, but his outlook, functions and training needed modification to meet changing needs. First, must come his care of the sick, but beyond that he will have communal and educational duties. He suggested that in the future the doctors of a district would form themselves into a faculty which would place the varieties of knowledge and experience of its members at the service of the community and in its collective capacity exercise a powerful and much needed influence on public life. The members of this local faculty could best hold high their standards of work by the hospital. He should like to see the conception of the hospital widened to that of a health centre where curative work, clinic, wards, communal service and educational facilities could find a home.

Another distinguished guest was Thierry de Martel, professor of neurology in the University of Paris. On the last evening of the congress, Friday, October 30th, fellowships were given. There were 533 candidates. Honorary fellowships were given to Lord Dawson of Penn, Sir William Arbuthnot Lane and Dr. Philip Franklin both of London, Dr. William Blair Bell of Liverpool, Dr. William H. Garmalt of Yale University, and Dr. Frederick S. Dennis of New York City. The order of Chevalier of the Legion of Honor was bestowed on Dr. Charles Mayo by Dr. Thierry de Martel. Dr. Vittorino Putti, of Bologna, Italy, was accorded the fellowship.

At the annual meeting on the afternoon of October 29th, Dr. Walter W. Chipman, professor of gynecology and obstetrics in McGill University, Montreal, was elected president. Dr. Charles Starr, professor of surgery in the University of Toronto, was elected first vice-president, and Dr. Charles Nassau, of Philadelphia, second vice-president.

News Items.

Red Cross Roll Call.—The physicians and surgeons have been mobilized for the ninth annual roll call of the American Red Cross under the leadership of Dr. Robert G. Reese. The drive began on Armistice Day, November 11th.

Park View Hospital.—This institution, located on upper Fifth Avenue, New York, has acquired an adjacent building to be used in the care of ear, nose and throat cases.

Bequest for Tropical Medicine.—A chair of tropical medicine is to be established at Tulane University School of Medicine, New Orleans, through a bequest of $60,000 from William E. Vincent. Dr. Aldo Castellani, of the London School of Tropical Medicine, is to be the head of the new department.

Thyroid Study.—A survey of the extent of thyroid enlargement and its relation to focal infection is to be made by the Public Health Service in several cities of Connecticut. Examinations will be made of school children.

Wyoming Medical Licenses.—The Wyoming Board of Medical Examiners announces that only graduates of Class A medical colleges will be recognized as applicants for licenses.

Celebration of Royal College of Physicians.—To mark a century in the occupancy of its present building, this association recently held a special meeting in London. The college was founded by Thomas Linacre, and its charter is dated 1518.

Survey of Potomac River.—A sanitary survey of the Potomac River in the vicinity of Washington, with a view to making it safe for bathing, has been undertaken by the Public Health Service and the District health officer, Dr. William C. Fowler.

Community Nursing Service.—A new law in Illinois provides that cities from five to ten thousand in population may levy taxes to provide community nurses, such nurses to be appointed by the mayor on recommendation of the local board of health.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the Alvarenga Prize for 1925 has been awarded to Dr. Raphael Isaacs, of Boston, for his essay on the Nature of the Action of the Röntgen Rays on Living Tissue. Essays for the prize award of 1926 must be submitted to the secretary of the College by May 1st; any subject in medicine may be selected but the article cannot have been published before.

Personal.—Dr. Smith Ely Jelliffe has just returned to New York to resume his practice after attending the International Meeting of Psychoanalysts in Bad Homburg and the German Society of Psychiatrists and Neurologists in Cassel. He also visited the neurological and psychiatric clinics of Amsterdam, Vienna, Padua, Milan and Genoa.

Dr. Charles F. Read, the former superintendent of the Chicago State Hospital, is the new head of the department of nervous and mental diseases of the Loyola University Medical School.

Dr. Harvey Cushing, of Harvard, delivered the Cameron Prize Lectures of the University of Edinburgh.

Dr. Charles H. Keene, of the Pennsylvania Department of Public Education, has resigned to become director of physical education of the University of Buffalo.

Dr. Robert H. Babcock, of Chicago, was honored with a dinner recently at the Drake Hotel.

Dr. George H. Bigelow has been appointed state commissioner of public health of Massachusetts.

Lord Bertram Dawson, physician to the King of England, Dr. Charles H. Mayo, of Rochester, and Dr. Rudolph Matas, of New Orleans, have been awarded the honorary degree of Doctor of Science by the University of Pennsylvania.

Dr. Chester C. Kirk has been appointed superintendent of the State Institution for the Feebleminded at Orient, Ohio. Doctor Kirk has been assistant superintendent of the Toledo Hospital, and professor of nervous and mental diseases, University of Arkansas School of Medicine.

Tufts College Medical School announces the appointment of Dr. Charles F. Painter as head of the department of history of medicine, and Dr. Mark H. Rogers, head of the department of orthopedic surgery.

Dr. John R. Whisemant of New York has been appointed urologist of the Tarrytown Hospital, Tarrytown, New York.

Gerhard Medal.—Dr. William H. Welch of Johns Hopkins, is the first recipient of the W. W. Gerhard gold medal of the Pathological Society of Philadelphia. This medal is established by Dr. Arthur H. Gerhard, in memory of William Wood Gerhard, who first distinguished the difference between typhoid and typhus fever.

Agamede Medal.—The Woman's Foundation for Health has established the Agamede Gold Medal, to be awarded annually to that woman citizen of the United States who has performed during the year the most distinguished service in the promotion of the health and happiness of American women.

Medical Charity.—The Federation for the Support of Jewish Philanthropic Societies of New York reports it will require a total of $981,650 to finance its medical charities. The institutions include Beth Israel Hospital, Hospital for Joint Diseases, Jewish Maternity Hospital, Lebanon Hospital, Montefiore Hospital, Bedford Sanatorium, Mount Sinai Hospital, and Stony Wold Sanatorium.

Gifts and Bequests.—The will of the late James B. Duke provides among his other bequests to Duke University, $10,000,000 for the medical school and hospital.

The estate of Julia Mayer provides $100,000 for the Jewish Hospital Association of Philadelphia.

The will of Simon R. Weil provides about $80,000 each for Mount Sinai, Presbyterian, Skin and Cancer, and the Hospital for the Ruptured and Crippled, New York.

The New York Orthopedic Dispensary and Hospital is to receive the residuary estate of Mrs. Caroline James, of Northport, Long Island, in amount about $300,000.

The Fifth Avenue Hospital, New York, is to receive $1,000,000 from the estate of Thomas Franklin Manville.

Postgraduate Classes in Stomatology.—The following courses, given under the auspices of the American Stomatological Association, are open to duly licensed physicians and dentists: stomatological bacteriology, under the supervision of Dr. William H. Park and Dr. Charles Krumweide; diagnoses and focal infection, Dr. G. Reese Satterlee, Dr. Homer E. Smith, Dr. George A. Wyeth and others; stomatological hygiene, Dr. Alfred J. Asgis and E. B. Hardisty; dietetics in stomatological practice, Dr. Holmes C. Jackson; clinical dietetics, Dr. Robert H. Rose. Clinical and laboratory courses will be given under the respective instructors in charge at the following institutions: Fordham Hospital; University and Bellevue Medical College; Medical Laboratories; Midtown Hospital, etc. For information, write to the director of classes, Aeolian Hall, 33 West Forty-second Street, New York City.

Hospital News.—The Jewish Maternity Hospital, New York, is conducting a campaign to raise $1,250,000.

The Bronx Hospital, New York, is conducting a campaign for $1,000,000 for a new building.

The Brooklyn Cancer Institute of the Cumberland Hospital opened November 2nd, with accommodations for thirty-five patients. Dr. Charles A. Brown is the director, and Dr. John J. Gainey, Dr. George F. Herrity, and Dr. H. Fromm are his associates. Many well known physicians are serving as a consultant staff.

The cornerstone of the new Caledonian Hospital in Brooklyn has been laid.

The Brooklyn State Hospital will erect fifteen new buildings at Creedmoor, Long Island, at a cost of $4,000,000.

The Babies' and Children's Hospital and the maternity Hospital of Cleveland have been dedicated, Abraham Flexner of the Rockefeller Foundation giving the address. These hospitals have each built new seven story buildings near the School of Medicine of Western Reserve University. In addition, the Lakeside Hospital and the Rainbow Hospital for Crippled Children will be affiliated with the medical and nursing schools of Western Reserve, all functioning as the University Hospital, thus carrying out one of the recommendations of the Hospital and Health Survey conducted by the Cleveland Hospital Council four years ago.

St. Joseph's Mercy Hospital of Ann Arbor, Michigan, is building a $100,000 unit for psychopathic patients.

Cook County Hospital, Chicago, is planning a $2,500,000 addition.

St. Margaret's Hospital, Hammond, Indiana, has dedicated a new wing, built at a cost of $750,000, and containing 325 beds.

The Herman Kiefer Municipal Hospital of Detroit is planning a $3,000,000 addition.

Society News and Notes.

The New York Academy of Medicine will hold an exhibit of the work of Charcot, beginning November 25th.

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Among noted British visitors at the recent Congress of the American College of Surgeons in Philadelphia were Sir William Arbuthnot Lane and Lord Dawson of Penn, physician to the King. Among representatives of other countries were Drs. Putti, of Bologna, Italy; P. U. Mirizzi, of Cordoba, Argentina; J. D. Hernandez, of Cienfuegos, Cuba; Manuel Gonzales, of Mexico City; Jose Vall of Buenos Aires; Alberto Fernandez Saralegui, also of Buenos Aires; and George Clowes Van Wart of Fredericton, N. B.

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The Emergency Tuberculosis Relief Committee of New York City secured for the night of November 17th the performance of Charlot's Revue of 1926 as an aid to its work. The chief object of the organization is to provide temporary relief for all deserving persons and the members of their families when threatened with or suffering from tuberculosis.

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At the regular meeting on Friday, November 6th, of the Brooklyn Institute of Arts and Sciences, Dr. Ira S. Wile spoke on the subject of early childhood as determining the future health and success of the individual.

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The British press has recently announced the organization of a society aiming to bring about a "golden age" of health in England. This association will be formally inaugurated early in December and will be known as the New Health Society. Prevention of disease will be its chief line of work. A nationwide propaganda for its launching is being undertaken. The instigators are said to be a number of prominent British medical men and hygienists, and the society will have the backing of three former Prime Ministers, the Earl of Oxford and Asquith, the Earl of Balfour. and Ramsay MacDonald.

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A health and tuberculosis conference was held in New York, November 19th and 20th, by the New York Tuberculosis and Health Association, the Milbank Memorial Fund, the State Charities Aid Association, and the city and state health departments. Representatives from the entire state were present. Addresses were given by Surgeon General Cumming, of the Public Health Service, Dr. Matthias Nicoll, Jr., Dr. Frank P. Monaghan, Dr. Floyd C. Haviland, Dr. Sanger Brown, and Dr. William H. Welch.

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At the recent meeting of the American Hospital Association, held at Louisville, Ky., Dr. Arthur C. Bachmeyer, of Cincinnati, was installed as president. Dr. Richard G. Broderick, of San Leandro, Calif., was made president-elect; Dr. Walter H. Conley, of New York, Miss Blanche M. Fuller, of Omaha, and Mr. Wallace W. Kenney, of Halifax, vice-presidents; Dr. William H. Walsh, of Chicago, executive secretary, and Mr. Asa S. Bacon, of Chicago, treasurer.

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The following are the new officers of the American Public Health Association: President, Dr. Charles-Edward A. Winslow, of New Haven; vice-presidents, Dr. John A. Amyot of Ottawa, Dr. Max C. Starkloff of St. Louis, and Dr. Albert J. Chesley of Minneapolis, and Dr. Louis I. Dublin of New York.

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The meeting of the Clinical Society of the Hospital for Joint Diseases on Tuesday evening, November 24th, will be devoted to addresses on Chronic Arthritis, Medical Aspects by Dr. William E. Preble of Boston; Surgical Aspects (includidng ankylosis) with moving picture of arthroplasty, by Dr. William Russell MacAusland of Boston. Members of the profession are welcome.

* * *

The American Electrotherapeutic Association held its annual meeting recently in Chicago. The presidential address was delivered by Dr. William T. Johnson, of Philadelphia, on Factors in the Establishment of Sound Physiotherapy Practice. The papers were grouped on the subjects of phototherapy, x ray and radium therapy, hydrotherapy and thermotherapy, high frequency therapy, static electricity, and the teaching and application of physical therapeutics. A clinic was held at the Cook County Hospital. The following officers were elected: President, Dr. Victor C. Pedersen, of New York; vice-presidents, Dr. Tilman Howard Plank, of Chicago, Dr. Harry E. Stewart of New Haven, Dr. Norman E. Titus of New York, Dr. George J. Ott of Boston, and Dr. Curran Pope of Louisville; treasurer, Dr. John W. Travell, of New York, and secretary, Dr. Richard Kovacs, of New York.

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An intensified antituberculosis campaign has been inaugurated by the forty-six public health and social welfare organizations comprising the Council of Lower West Side Agencies of New York City. The work will cover the tenement districts from Fourteenth Street south to the Battery. Popular lectures will be arranged and literature distributed through the Bowling Green Neighborhood Association and Greenwich House.

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The skull of the earliest known citizen of London has recently been discovered and introduced in an interesting lecture by Prof. Elliot Smith and Dr. Dawson to the British Zoological Society at a recent meeting of that organization. Although only part of the skull was found, it was possible to tell that it belonged to a woman of about fifty, and that she was lefthanded—this from certain indentations in the bones. The skull was found twenty-six feet below road level in absolutely disturbed gravel of Pleistocene times, and in the same layers in which the prehistoric woolly rhinoceros remains were found. The lady, according to the scientists, was closely related to the Piltsdown and Neanderthal men, popularly considered the "missing links" because of their apelike cranial characteristics.

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The New York Electrotherapeutic Society met on November 4th at the Academy of Medicine. Dr. Richard Kovacs gave an interesting report of the thirty-fifth annual meeting of the American Electrotherapeutic Association recently held in Chicago, and Dr. Norman E. Titus spoke on the International Congress on Radiology and Physiotherapy in London. The paper of the evening, on Diathermy in Gonorrhea, was read by Elkin P. Cumberbatch, M.R.C.P., of London.

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Dr. Aher M. Pennell, née Sorabji, of India, recently arrived in New York City, where she visited various medical institutions of note.

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At the meeting of the New York Microscopical Society on November 6th at the American Museum of Natural History, Dr. William W. Browne gave an interesting address on the Rôle of the Microscope in Modern Bacteriology.

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Meetings at the Academy of Medicine during the first half of November included that of the Academy itself on November 5th, at which Dr. Max Goldstein, of St. Louis, gave a practical demonstration of modern pedagogic methods in the training of the deaf child by teachers and pupils of the Central Institute for the Deaf of St. Louis; the Section of Dermatology and Syphilis met on November 4th, when patients were presented by Drs. Lapowski, Walzer and others; the Section of Neurology and Psychiatry at its meeting on the 10th presented a program arranged in cooperation with the New York Neurological Society and consisting of cases presented by Drs. Riley and Rombold, and papers by Drs. Foster Kennedy, Folsom, Kirby and Grimberg; the Section of Pediatrics, which met on the 12th, enjoyed papers by Drs. Bass, Carp, and Levene. The anniversary discourse will be on the subject of The Doctor and the Changing Order, and will be delivered on November 19th, by Dr. George E. Vincent. The second lecture of the series of the Harvey Society was given by Dr. John Northrup, of the Rockefeller Institute for Medical Research on November 14th. The subject was Pepsin and Trysin.

Other recent meetings of interest in New York were the first annual convention of the New York Pharmaceutical Conference, held during the last week of October; and the thirty-fifth annual meeting of the New York and New England Association of Railway Surgeons, held at the Hotel Commodore, November 5th and 6th the principal speakers including Drs. J. E. J. King, of New York City; F. Park Lewis, of Buffalo; W. L. Estes, Jr., of Bethlehem, Pa.; George M. Cady, of Oswego, N. Y.; Joshua Sweet, of Philadelphia, and J. L. Bower, also of Philadelphia.

Book Reviews

SURGERY OF TUBERCULOSIS

The Surgery of Pulmonary Tuberculosis. By John Alexander, B.S., M.A., M.D., Assistant Professor of Surgery in the Medical School, University of Michigan. Illustrated with fifty-three engravings and twelve plates. Philadelphia: Lea & Febiger, 1925. Pp. 356.

The introductions to this book are written by the eminent Dr. Hugh Cabot, professor of surgery at the University of Michigan, and the equally eminent phthisiotherapeutist, Dr. Edward R. Baldwin, director of the Trudeau Foundation and Trudeau School of Tuberculosis of Saranac Lake, and they show the timeliness of such a work, which is virtually the first American textbook—for such it may justly be called—on the surgery of pulmonary tuberculosis. In the first chapter, which is entitled Perspective of the Surgery of Pulmonary Tuberculosis, he justly points out that at the present time relatively few cases of pulmonary tuberculosis receive the benefit of surgery. Surprising and certainly encouraging are the statistics quoted, according to which of the surgically treated cases in all countries in recent years thirty-seven per cent. of the patients have actually been cured, and another twenty-four per cent. decidedly improved; the operative mortality was 1.5 per cent., and the additional mortality during the first six weeks only twelve per cent. The remaining nineteen per cent. includes deaths that had no connection with the operation, most of them caused by progression of the disease in the unoperated lung. No account is given of the remaining 1.5 per cent. to complete the hundred.

In describing the evolution of surgical therapy, the author discusses the cavity drainage and direct medication of tuberculous lesions. The Freud operation, which consisted of the partial resection of the first cartilage, in order to mobilize the apex, Dr. Alexander relegates as antiquated. He also speaks unfavorably of pulmonary resection and then describes the various modern operations which do not affect the tuberculous lesions directly but influence them favorably by resting and relaxing or compressing the lung. In chronological order the author traces these methods, giving full credit to the originators of the various operations, and makes this chapter most interesting by giving the portraits of the eminent surgeons who have been pathfinders in each method. Among these are De Cereville, Brauer, Gourdet, Wilms, Sauerbruch, Tuffier, Jacobaeus, Stuertz, Archibald, Bull, Saugman, Gekler, Davies, Berard, Key, and Sayago. Gekler is the only American mentioned and Archibald the only Canadian. It is regrettable that no mention is made even of the name of Murphy who, with Forlanini, must be considered the inventor of artificial pneumothorax, one of the most important modern surgical means to give local rest to the afflicted lung.

In the chapter on evolution, the author mentions among other things the extrapleural pneumolysis. The most widely used method for this procedure is that of Tuffier who, in 1910, for the first time filled the extrapleural hole made by the pneumolysis operation, using the free human fat graft. Others are using paraffin and pedicled grafts of the pectoral muscles. Concerning phrenicotomy, the author says that it may prove a valuable procedure for patients too ill for thoracoplasty. Under nonsurgical mechanical therapy are mentioned Stewart's splint, Golden's plaster of Paris jacket, and Knopf's controlled diaphragmatic breathing, or conscious bradypnea, and recommended as valuable adjuvants in the usual sanatorium treatment. Dr. Alexander, however, prefers artificial pneumothorax or thoracoplasty when they are indicated as a more sure cure. The pathological anatomy and physiology of pulmonary compression he sums up by saying, "Pulmonary compression constitutes a physiological amputation, stagnant secretions are removed and are succeeded by nonspecific inflammation and encapsulation of tuberculous lesions and profused poliferation of fibrous tissue."

Under indications and contraindications valuable statistics are offered. Saugman considers only four to eight per cent. of his tuberculous patients can be benefited by surgical therapy; Zeigler, on the other hand, found that he had recommended twenty per cent. of his six hundred patients to be operated upon by thoracoplasty, exclusive of phrenicotomy. The author very wisely says that the indications for surgery are considerably more strict than for pneumothorax, and not all those cases in which pneumothorax fails are fit for operation. Somewhat astounding is the statement that "In spite of the fact that the operation of artificial pneumothorax *per se* is safer than that of thoracoplasty *per se,* there is a rapidly growing sentiment among those experienced with both methods that thoracoplasty should be used in preference to pneumothorax, even a complete one, for a large group of selected cases." It would seem that a more lengthy experience and more extensive reports from all countries, from phthisiotherapeutists as well as surgeons, should be brought together before thoracoplasty should be given the preference over artificial pneumothorax in the average tuberculous case needing compression.

Jacobaeus's operation for cutting pleuritic adhesions with the aid of a thoracoscope and an electric cautery, finds little favor with this author, but he describes and illustrates it most fully. He comes to the conclusion that Jacobaeus's operation is valuable and safe when the adhesions are thin and cordlike, but dangerous when they are thick and extensive. He believes that "If a satisfactory pneumothorax cannot be attained by a relatively simple operation of short duration both cauterization and pneumothorax should be abandoned and thoracoplasty performed."

Before describing in detail the well known Wilms-Sauerbruch extrapleural paravertebral thoracoplasty, Dr. Alexander enumerates indications for local and general anesthesia, apparently giving preference to a combination of novocaine suprarenin anesthesia and nitrous oxide oxygen analgesia. The descriptions of the principal thoracoplastic operations, such as Wilms-Sauerbruch's and Brauer's operations, are carefully outlined and illustrated. The last chapter gives the results in detail of paravertebral thoraco-

plasty which gives rise to the hope that with the improvements in operative technic, preoperative and postoperative management, and especially in proper selection of cases for thoracoplastic surgery, surgery will ultimately be one of the most important factors in saving life in cases of pulmonary tuberculosis hitherto considered hopeless. By giving a bibliography of twenty pages, the author shows that besides his own valuable clinical studies he has devoted a great deal of time to reading the literature on the subject.

For this admirable work Dr. Alexander has received the Samuel D. Gross prize for surgery for 1925. He is to be coingratulated on this well deserved distinction and so is the American medical profession on having so valuable a guide in the surgery of pulmonary tuberculosis placed at its disposal. The book will aid physicians and surgeons in saving the lives of many tuberculous sufferers who may be restored to health and happiness and even to useful activities and an earning capacity. The printing, illustrations and binding are done with the usual excellence of the Lea & Febiger publications.

TUBERCULOSIS IN CHILDHOOD

La Mortalita Della Prima Infanzia Nelle Sue Relazioni con le Infezioni Pretubercolari e la Tubercolosi Soluzione Pratica e Definitiva di Questi Gravissimi Problemi. Par Dr. J. Ferran. Barcelona: Supplemento de *La Nipiologia,* Anno X, 1924. Pp. 47.

This is an interesting pamphlet of 47 pages giving a good summary of our present knowledge of tuberculosis in childhood, detailing the matter of tuberculous infection in early childhood and the relation a pretuberculous condition bears to the morbidity and mortality of tuberculosis in childhood. An entire chapter is devoted to the description of the methods of immunization, and twelve pages are devoted to statistical tables. The book is written in excellent Spanish and any tuberculosis worker familiar with the language will find it well worth while.

ARTIFICIAL SUNLIGHT

Artificial Sunlight and Its Therapeutic Uses. By Francis Howard Humphris, M.D. (Brux.), F.R.C.P. (Edin.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), L.M. (Rot., Dublin), D.M.R. & E. (Cantab.) New York: Oxford University Press. Second edition 1925. Pp. 194.

This book is essentially a consideration of ultraviolet light from a clinical viewpoint. Dr. Humphris does not go into the deep scientific side of it as much as he might have done to make the book more complete, but he presents the subject for a general clinician in about the best way that has been done so far. This second edition is better illustrated than the first one and the way the whole subject is handled makes it an extremely useful book for the practitioner.

The use of the carbon arc lamp in Europe is much more extensive than in the United States and the observations regarding this work are well worth understanding because the carbon arc is establishing a field of usefulness wherein the mercury arc lamp is not as good. Although both of these lamps generate ultraviolet light, the mercury arc lamp is so much more powerful that it hardly enters into the field of the carbon arc lamp.

NOSE, THROAT AND EAR

Diseases of the Nose, Throat and Ear. By William Lincoln Ballenger, M.D. Revised by Howard Charles Ballenger, M.D. Fifth Edition. Illustrated with 551 Engravings and thirty-two Plates. New York and Philadelphia: Lea and Febiger, 1925. Pp. i-1080.

The popularity of this classic in the literature of American otolaryngology is bound to be greatly enhanced by the appearance of this fifth edition, which, thanks to numerous additions of new matter and a thorough revision of the old texts, presents, both to the specialist and the general practitioner, a veritable encyclopedia of information on diseases of the ear, nose and throat. Its contents embody all our most recent advances in this special branch of medicine, such as (to take but a few instances) the last word on hay fever, hyperesthetic rhinitis and asthma, the medical and surgical aspects of labyrinthine conditions in the light of recent investigations, new operative procedures in ozena (Halle and Lautenschlager operations), etc. On the other hand a great deal of antiquated and obsolete matter had been thrown out, and every effort made by the editor to bring the book up to date—an attempt in which he seems to have succeeded admirably.

All in all the book can be unreservedly recommended as one of our best textbooks on otolaryngology. Its makeup as to paper, printing, etc., is of the high quality that we are accustomed to expect from the publishers.

THE EXTRA PHARMACOPŒIA

The Extra Pharmacopœia of Martindale and Westcott. Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Eighteenth Edition, Vol. II. London: H. K. Lewis & Co., Ltd., 1925. Pp. 728.

The reviewer of this "externally" small book does not remember to have seen ever before one volume that contained so much information. Including the index (which is for volumes I and II) the book comprises 728 finely typed pages offering information on very many branches of chemical, laboratorial and practical medicine. Analytical tests, stains, and analyses are described, and among the many subjects discussed are radioactive substances and mineral waters. Incidentally the contents of many proprietary preparations are outlined.

It is regrettable that one of the authors, Dr. W. Harrison Martindale, did not live to see the success of his efforts in producing the eighteenth edition of this useful book.

HEALTH RULES

How to Live. By Irving Fisher and Eugene Lyman Fisk, M.D. Illustrated. New York and London: Funk & Wagnalls Company, 1925. Pp. 500.

The value of this useful book is definitely attested by the fact that this issue of 1925 is the eighteenth edition. Alterations from earlier editions include the omission of material which had become out of date, and the emphasis of the preventive and public health aspects of hygienic living. There is a section on quackery and its evils and dangers, and suggestions are offered for its suppression and the identifying of the professional quack and charlatan. The list of titles under which various quackeries are practised, which was compiled recently by the Department of Health of New York City, is quoted in this connec-

tion. There is a supplementary section on special subjects of particular interest at the present moment, such as the food question, the cardinal principles in weight regulation, hygiene of the brain and nervous system, the alcohol and tobacco problems, the common cold, focal infection, mortality and the chronic organic diseases, eugenics, etc.

The subject matter and treatment of the book as a whole, which is essentially popular, justifies its subtitle, Rules for Healthful Living Based on Modern Science.

HEALTH

Personal and Community Health. By Clair Elsmere Turner, Associate Professor of Hygiene in Tufts College Medical and Dental Schools. Illustrated. St. Louis: C. V. Mosby Company, 1925. Pp. 426.

The first chapter of this book causes immediate interest in the work of the author. The paragraphs of this chapter on the university viewpoint of health are especially well put, and the statement that "the number of really well people who are 'up and about' is relatively small" is correct. He also states that "faulty habits of living of the people at large is one of the most important factors working against the national health and efficiency."

These quotations show the author's belief in the necessity for a book of this type for students of all departments of learning, and in fact for all youth.

The chapters on foods and their adulteration, and on nutrition, as well as those on personal hygiene, from exercise to sleep, are excellent. The discussion of the prevention of disease, hereditary influences and immunity offers information that should be acquired by all, and especially by the youth of the nation. The chapters on community health measures should be studied by all citizens who are interested, or will be, in civic and state promotion of public health. Public health boards and health commissions include many laymen whose services will be more valuable after a study of this book.

After this sincere approval of the reviewer of the author's work, the latter should be willing to accept and consider one important criticism of a part of the book, however, for which he is not wholly responsible, namely, the chapter on hygiene of the mouth. This section on dental hygiene, written by Dr. William Rice, is excellent, except the part that discusses the toothbrush. Dr. Fones's teachings as to the method of using the toothbrush are copied, but like almost all similar discussions there is not a word as to the menace of the germ contaminated brush. The toothbrush is never sanitary. It cannot be cleaned, and must of necessity be a frequent carrier of infection. This danger is suggested by the following quotation from page 131: "The danger of infection of the soft tissues of the mouth by proper brushing is so slight as to be practically negligible." The author of this chapter also states, on the same page, that he "has found that a brush rinsed in water after using and then placed in a closed receptacle developed more bacteria than one which was rinsed in hot water and left in the air to dry." This positive acknowledgment that the toothbrush cannot be kept free from bacteria even "as the result of experiments" positively assumes that during any mouth or throat infection the toothbrush could contain and grow bacteria.

It is hardly necessary to suggest that the toothbrush could contain and perpetuate the germs that infect the tonsils, the germs that are associated with pyorrhea, with Vincent's disease, with diphtheria, and perhaps many other acute diseases that are acquired by way of the mouth. School toothbrush drills as now given, with the toothbrush used in the mouth and then carried home to be washed later, are an abomination. Substitutes for the toothbrush may at the present time be obtained, and doubtless new inventions will perfect them. The toothbrush used, imperfectly (of necessity) cleansed, hung in the dust and atmosphere of the bathroom, and again used on the following day, whether the individual has a cold, a sort throat or influenza, a canker sore, or a mouth ulceration, must go into innocuous desuetude.

The last paragraph of this chapter admits that there is "undoubted relationship between systemic infection and dental foci." Then the writer of the chapter says, "but to act upon the hypothesis that diseased teeth represent the sole cause of these systomic diseases and to advise wholesale removal of useful organs, is entirely unwarranted." This sentence is very unfair, as the writer of this review does not know that it has ever been asserted that "diseased teeth are the sole cause of these systemic diseases." The exact relationship of a diseased tooth to a systemic disease is practically of no importance whatsoever. *Every diseased tooth should be immediately removed as soon as discovered,* lest it be a factor in causing some future disease or diseased condition. We do not vaccinate after smallpox has developed; we do not give vaccines after typhoid fever has developed, or after diphtheria has developed, but we attempt to establish immunity *before* these diseases have occurred.

PEDIATRIC NURSING

Pediatric Nursing. A Textbook for Nurses. By Abraham Levison, B.S., M.D., Associate in Pediatrics, Northwestern University Medical School. Illustrated with twenty-seven Engravings and one Colored Plate. Philadelphia and New York: Lea & Febiger, 1925. Pp. 251.

This practical little book on pediatric nursing is divided into three parts. The first two parts are concerned with the anatomy, physiology and general care of infants in the home and the hospital, and the general methods of examination and treatment of children and also with concise descriptions of the diseases of infancy and childhood. The third portion, consisting of several chapters on the psychological and sociological phases of child nursing, is the most distinctive and valuable part of the book, as very few, if any, textbooks for nurses deal with this very important aspect of the subject. The subjects discussed include the art of child nursing, the expectant mother, the perplexed mother, the kind grandmother, the foreign mother and her child, hospital versus home treatment of the sick child, superstitious notions regarding contagious diseases, and the psychology of the sick child. These chapters contain some very sound commonsense and are worth the price of the book alone.

The subject material is well arranged and up to date and the book may well be recommended to every nurse, especially to one who specializes in the nursing of children, which is becoming very popular among the more well to do people.

Medicoliterary Notes.

One of the recent contestants for the record of the English Channel swim was a physician, Dr. G. B. Brewster, of Nesting, Shetland, who started from Folkstone Beach, swam twelve miles in three and a half hours, then had to give up seven and three quarter miles from shore because of the heavy seas.

* * *

An increasing number of women are entering the medical profession, and in the matter of examinations at least, they more than hold their own with men students. A somewhat surprising feature of women medical students is their preference of surgery to medicine.—*Medical Press and Circular.*

* * *

An editorial in a recent issue of the *Manchester Guardian Weekly* states that within the past six years the number of street accidents has nearly trebled itself in Great Britain, and one third of the victims are small children. For 1924, the casualty list of the streets was 3,651 killed and 94,584 injured. The National Safety First Association has had prepared under the title of *Safety First* a book for use by teachers and parents. It describes preventions and remedies for the various disasters that seem to await children and should be a very useful and helpful little volume. The publishers are Hodder & Stoughton.

* * *

The Offence, a play now running at a London Theatre, deals with a subject of special interest to the medical profession. Its chief purpose is to illustrate the theory of repression and its evil results, often after many years from the original cause and when the inciting circumstance has long been forgotten. Rumor has it that the play will be produced in New York next season.

* * *

What is the world's shortest letter? The records place it to the credit of Victor Hugo noted for his impatience and impetuosity. On the very evening of the day on which one of his new works was published he could not resist the temptation to inquire how the sales were going. So he wrote to his publisher:

"? Victor Hugo."

The publisher was equal to the occasion, for his reply was:

"!"—*New York Evening Post.*

* * *

Most of the streets of Vienna are paved with granite, and it has been found that many cases of silicosis with terminal tuberculosis have been caused by the dust arising from it. The city is experimenting with tar and oil as preventive measures, and it is asserted by the authorities that already, aside from a general improvement in the health of the people, the outlay for the tar and oil will be more than made up by the decrease in demands on public hospitals and physicians of charitable organizations who are paid by the state.

* * *

The people of New York are apparently very fond of buttermilk. There are a number of street stands where nothing else is sold, some of it fresh from the churn, so to speak, but most of them sell the synthetic variety, made from sweet milk by the addition of cultures. Restaurants, hotels, soda fountains and all sorts of quick lunch places report an enormously increased demand for this healthful beverage, especially within the past year.

* * *

The Bureau of Industrial Hygiene of New York State has recently issued a bulletin dealing with silicosis, with the hope that it will stimulate discussion of the subject by the medical profession and lead to an exchange of ideas and experience. This bulletin is distributed without charge to any physician upon request. Applications should be addressed to Dr. Leland F. Cofer, director, Bureau of Industrial Hygiene, 124 East Twenty-eighth Street, New York.

* * *

Lord Jim, one of Conrad's most popular novels, has been filmed in Los Angeles harbor recently. A strange and interesting group of sea craft was collected to give the proper atmosphere to the picture. There were sixteen vessels in all, ranging from an ordinary steamer to a Chinese junk. The steamer was built thirty-five years ago and is reported to have touched at every port on the Pacific coast. The old vessel had been allowed to sink in shallow water since it was so worn and out of date that it was considered useless, but it was raised and used in the picture, which represents the period in which it was built, furnished and equipped. Another interesting vessel used was the *Hackadada,* a mystery ship usually known as the *Adventurer.* The cargo is said usually to be secret, and the destination never certain. The ship is said to have sailed under five different flags within the past five years. Other craft were a three masted schooner which has already been used in the screen versions of *To Have and To Hold, Ebb Tide, Children of Jazz,* and *Peter Pan;* two American mine sweepers that were in the war, eight sampans from the Orient, and various other craft were used.

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Survey of Hygienic Conditions in the Printing Trades is the title of a study by S. Kjaer made for the U. S. Department of Labor and issued as Bulletin No. 392 of the Bureau of Labor Statistics.

* * *

At a recent lecture at University College, Dublin, Dr. Porkory, a Berlin professor of philology, advanced the theory that the Irish are descendants of the Eskimos. He stated that in remote parts of Ireland and Scotland he had found types with Mongol features, including oblique eyes, straight black hair and thick lips. He believes that the first inhabitants of Ireland arrived there about 4,000 B. C., before which time the island was ice covered.

* * *

The issue for September 9th was the annual educational number of the *Medical Press and Circular.* The contents include a valuable list of the English universities, colleges, schools of medicine, intraacademical institutions, special hospitals, and postgraduate institutions that offer medical training, with an outline of the courses, conditions of study, and other pertinent information about each.

* * *

A book list for children has recently been compiled by certain libraries in the country, with the help of the children themselves, who were asked to recommend and criticize books. One fourteen year old boy, after reading *Evangeline,* declared that "it didn't seem possible that a girl would walk so many miles for her beau, when now a girl wouldn't walk a mile to see him."

* * *

Tuberculosis has been so rife lately in Hungary that a nationwide crusade has been undertaken for prevention. The Antituberculosis League, with Dr. Okolicsanyi Kuthy at the head, is managing the campaign. Registration of cases is to be the first step, then removal of infected persons to a camp in the mountains. The state is cooperating with local agents.

* * *

Robert Haven Schauffler was recently called back from a fishing trip in Maine to correct the proofs of his new anthology, *The Poetry Cure,* which his publishers, Dodd, Mead & Company, describe as a pocket medicine chest of verse, because that compiler has arranged the poems in it according to the moods that they are supposed to counteract, labeling some of them Anodynes for Sorrow, and others Stimulants for a Faint Heart, Pills to Purge Melancholy, etc. Just which prescription Mr. Schauffler took when his fishing trip companion wired that the three pounders were just beginning to rise we are not informed, but, as his pharmacopœia includes the best poetry from Chaucer to Millay, he was probably able to find something to ease his pain.—*N. Y. Times.*

* * *

Chicago is to have a Behavior Research Institute, allied with the existing Institute for Juvenile Research. A committee of fifty physicians and philanthropists has undertaken to raise the funds.

* * *

The proportion of childless marriages in civilized countries, according to Dr. E. Kehrer, director of the municipal gynecological clinic in Dresden, is from ten to fifteen per cent. The cause and cure of such a condition he declares to be one of the most important problems of modern eugenists.

Abstracts from Current Literature

THERAPY

Sodium Iodide in the Treatment of Infected Ulcers.—S. A. Pfannenstill (*British Medical Journal,* April 18, 1925) administers sodium iodide orally. This salt is very quickly absorbed into the blood and is so carried by the circulation to the ulcer. There it meets some second substance, applied locally, which can set free iodine from the compound salt. It is freed not only by chlorine and the hypochlorites (Dakin's and Carrel's solutions) but also by any strongly oxidizing substance such as ozone and hydrogen peroxide. Peroxide solution is preferred because it is the handiest and always constant in composition. Under these conditions iodine acts in the nascent state, thus increasing its already great bactericidal properties. Hydrogen peroxide, when in acid solution, frees iodine more easily and to a greater extent than in a neutral solution. The author therefore acidifies the peroxide solution with a small quantity of an acid, generally acetic acid, but boric acid may be used in the mouth as it avoids injury to the teeth.

In the case of an ulcer on the surface of the body or the limbs, an average dose of fifteen grains of sodium iodide is given two or three times daily. Larger doses may be given, sixty to ninety grains a day, the effect of the treatment then being greater; but this entails some risk of iodism. Immediately after the first dose of sodium iodide the local peroxide treatment is begun. A layer of cotton wool is kept continually soaked with the peroxide solution. The strength of the peroxide solution must be kept at one to three per cent., generally at one to one and a half per cent., because stronger solutions often irritate the sound skin around the ulcer. An addition of one quarter to one half per cent. acetic acid is quite sufficient for acidifying. After the last dose of sodium iodide has been given for the day the local treatment of the ulcer should be continued for at least three to four hours. Pockets should be packed loosely with gauze. The efficiency of the method depends upon there being an intimate and prolonged contact between fresh hydrogen peroxide and the infected surface to which sodium iodide is being carried through the bloodvessels. A surgical operation will sometimes make a fistula suitable for this treatment.

This method of treatment has proved very valuable in treating infectious conditions and ulcerations in the mouth and pharynx, such as mercury stomatitis, pyorrhea, gingivitis, and angina necrotica (Vincenti); also in tuberculous and lupoid ulcerations in the nose and throat, but with variable results.

Thyroid and Manganese Treatment in Various Diseases.—In a preliminary report, Herbert W. Nott (*British Medical Journal,* March 7, 1925) gives his results with the thyroid and manganese treatment in some cases due to toxemia or chronic infection, in many of which there was an element of thyroid inefficiency. The treatment consists in the administration of rectal injections of a solution of pure potassium permanganate, of various strengths, given at various intervals, according to the severity of the infection or the length of time it has existed. The standard solution used is one grain of permanganate to a pint and a half of sterile warm water. The dose of the thyroid is one grain, given twice daily on the average, but doses of one half to five or ten grains daily are in some cases desirable, with proportionate doses in children. Another method of giving potassium permanganate in an easily absorbable condition is by cachet. From one eighth to one half a grain of the pure powdered drug is enclosed in the smallest sized cachet. One is swallowed with half a pint of hot water on waking in the morning, when the stomach is empty, and four minutes later, another drink of hot water is taken. This is by no means as effectual as the injection method, but where continuous treatment is desired and when injections are not practicable, this method may be used with advantage.

A series of 227 cases of various types are reported, including acute infections (such as pneumococcal meningitis, cerebrospinal meningitis, acute and chronic bacillus coli infection); joint diseases (such as acute and chronic rheumatoid arthotis), heart diseases (such as cardiac asthma and angina pectoris); disorders of pregancy (such as morning sickness, eclampsia); disorders of metabolism (such as acute gout and diabetes mellitus); disorders of the digestive system (such as gastric ulcer and colitis); nervous diseases (such as infantile convulsions, chorea, and sciatica); pulmonary diseases (such as chronic bronchitis and asthma); skin diseases (such as malignancy, chronic seborrhea, pemphigus foliaceus, acne, acne rosacea and varicose ulcers); goitrous conditions (such as myxedema, parenchymatous goitre, and exophthalmic goitre); chronic mastitis, and some composite cases.

Iron in Nutrition.—I. Nutritional Anemia on Whole Milk Diets and the Utilization of Inorganic Iron in Hemoglobin Building. E. B. Hart, H. Steenbock, C. A. Elvehjem, and J. Waddell (*Journal of Biological Chemistry,* August, 1925) present data which support the original hypothesis of Abderhalden, that hemoglobin can be built from inorganic iron in the diet only when that diet is accompanied by certain organic structures, and further that milk is not only very low in iron, but that it is also low in the organic complex or complexes that make possible the building up of hemoglobin by the organism in the presence of inorganic iron. Rabbits fed on a whole milk diet well supplied with vitamine A develop a nutritional anemia. Inorganic iron added to the basal ration will not correct this anemia. Inorganic iron in the presence of fresh cabbage or an alcoholic extract of yellow corn meal will prevent or cure such an anemia. These extracts are free from iron.

Ultraviolet Light in General Practice.—T. Clyde McKenzie (*British Medical Journal,* May 9, 1925) has obtained good results with a quartz mercury vapor lamp of the atmospheric type in ulcers, eczema, alopecia areata, sycosis, lupus, burns, psoriasis, sciatica, local tuberculous conditions, chorea, rickets, and rheumatism. Ultraviolet light is by no means a panacea for all ailments, and in some of the diseases it was used simply in place of a more painful and cumbersome method. It often acts quicker than some of the older methods, allowing patients to go on with their work or return earlier to work than otherwise. It is especially recommended in industrial areas where sunlight is scarce and the patient is therefore more susceptible to ultraviolet action. The artificial sunlight bath appears to act on the general metabolism of the body—the appetite improves and the mental outlook brightens. This is particularly the case in industrial districts.

Use of Triple Distilled Water in the Treatment of Children.—Theodore Le Boutillier (*Archives of Pediatrics,* May, 1925) recalls that the intravenous use of distilled water has been employed for some time in massive doses, though small quantities, as now given, have produced speedy and spectacular results in many cases. With this treatment there is an average increase of the red cells, which lasts over a week, the white cells are not increased, but the hemoglobin in increased; the coagulation time of the blood is decreased, and the carbon dioxide content of the blood is changed remarkably.

The triple distillation of tap water removes all possible contamination or any poisons. The water should be freshly prepared and used within three of four days at the most to prevent absorption from the glass container.

Two methods of administration have been used. The first, and by far the best, is the intravenous method. The solution when injected should be as close to the body temperature as possible. Where a vein cannot be found it may be given intramuscularly, but this is distinctly painful for about fifteen minutes. The dose varies with the age and condition of the patient, from 0.5 to 1.5 c. c. intravenously, or 2.0 to 3.0 c. c. intramuscularly. In a chronic or subacute condition, one treatment a week will be sufficient, while in acute cases the treatment should be given at about two or three day intervals until a maximum result is obtained, at which time they should not be given more frequently than at weekly or two weekly intervals. A too large a dose will increase all the symptoms for which the patient is being treated.

Remarkably good results were obtained in cases of acidosis, some of them associated with cyclic vomiting, in pertussis, bronchial asthma, various forms of neuritis, scarlatinal rheumatism, urticaria and eczemas, and angioneurotic edema.

A Study of Insulin Action.—Edward C. Mason and C. W. Matthew (*Journal of Laboratory and Clinical Medicine,* July, 1925,) studied the rôle of the nerve mechanism in insulin action, by means of stimulating or paralyzing portions of the autonomic and central nervous system of rabbits and dogs, and following such procedures with insulin administration and blood sugar determinations. Insulin apparently acts independently of the central nervous system, the sympathetic nervous system, and the parasympathetic nervous system. The blood sugar was lowered by insulin after the following procedures: the destruction of the central nervous system; the administration of atropine in doses sufficiently great to paralyze the parasympathetic endings; and the administration of nicotine and lobeline in doses which stimulate and paralyze the sympathetic ganglia. One animal which was pithed, brain and cord, and which also received atropine and nicotine, showed a marked increase in blood sugar following the administration of excessive doses of insulin. Small doses of nicotine which stimulate the sympathetic system do not counteract the blood sugar lowering produced by insulin.

Treatment of Angina Pectoris.—Joseph T. Wearn (*Medical Clinics of North America,* March, 1925) states that the value of digitalis and nitrites is too well known for comment. The value of theobromine, however, is not so generally understood. Its use is, however, based upon sound pharmacology. One of the striking effects of theobromine is dilatation of the coronary arteries. Theobromine will give relief at times when nitrites fail, and if given daily may reduce the number of anginal attacks appreciably. Of much greater importance, however, than isolated anginal attacks is the whole problem of treatment. For the individual attack it is generally accepted that drugs are indispensable and almost invariably give immediate relief, but depending upon drug therapy alone is as unwise as depending upon rest alone. A rational combination of rest in the cases in which exhaustion plays a rôle and in instances of the very early signs of heart failure should be borne especially in mind. The importance of these therapeutic procedures is great, and when they are employed together with a careful and wise regulation of the patient's life and activities good results may be expected.

The Use of Iodine in Goitre.—Frank H. Lahey (*Boston Medical and Surgical Journal,* September 10, 1925) stresses the point that Lugol's solution was not intended as and is not a cure for exophthalmic goitre, that it is solely a method of preparing patients for operative procedures so that they will endure them more safely and that a lessened number of steps may be employed. He urges that Lugol's solution be not administered to patients suspected of thyroidism until the diagnosis has been proved. He also urges that, if operation is to be undertaken upon a patient with exophthalmic goitre, he be sent to the surgeon without having had Lugol's solution. This for two reasons; one, in order that the Lugol's solution may be given under the observation of the person who is to do the operation, and, two, that he may be aware of the condition of the patient before the drug is given and of the benefit obtained by its use, as this aids materially in determining whether a divided stage operation is needed or not. While Lugol's solution is of great value in eliminating the necessity of multiple stage procedures, it must not for a moment be considered that every patient who has been prepared with it can safely withstand a subtotal thyroidectomy in one stage.

Treatment of Neuritis by Electrolysis.—W. Black Jones (*British Medical Journal,* January 17, 1925) reports that electrolysis gives good promise of relief in cases of neuritis where the lesion is of the interstitial type, due to inflammation of the nerve sheath.

The apparatus consists of a pantostat, or similar instrument, with two electrodes, one being a large pad, which is applied to the arm or leg, and a smaller pad or button. An insulated needle, with a platinum point, is fixed in a holder, and is used for the actual treatment.

For diagnosis, the pads are soaked in a warm salt solution, and the larger is applied to some neutral part of the body, such as the wrist; both are connected with the terminals of the induction coil. The current used should be so weak that when the small pad is applied to the normal skin it is hardly felt; when it approaches the site of the inflamed nerve a distinct pain, or series of shocks is felt. This area is marked with a pencil. Should no tender point be found it may be concluded that neuritis is not present.

For treatment the skin is swabbed with iodine, and a few drops of local anesthetic are injected under the epidermis. After a few minutes the platinum needle, having been connected with the negative pole of the constant current, is inserted into the skin and pushed down upon the nerve. The large pad is connected with the positive terminal. If the spot is very tender a current of one milliampere or less is applied, but sometimes from three to five milliamperes may be used. The current is allowed to flow for ten minutes; it is then gradually turned off and the needle is withdrawn. Only one spot should be treated on the same day, and a day's interval is advisable before the next treatment. It is important to note that, in cases of multiple spots, complete relief is not obtained until all spots have been treated. It is probable that the electrolysis converts the sodium chloride of the tissues into sodium hydrate, and this has a caustic effect on the exudation.

Treatment of Tetanus.—Carroll Smith and W. E. Leighton (*American Journal of the Medical Sciences,* December, 1924) say that the rational treatment of tetanus should be carried out as follows:

1. Prophylactic antitoxin, subcutaneously in all suspicious wounds, repeated again after ten days, especially if suppuration is present, or if an operation is to be performed.
2. Antitetanic serum should be given during an attack of tetanus. Intravenous administration may be satisfactory. Intraspinal serum should be employed in severe cases or where improvement is not satisfactory.
3. Spasms should be controlled by the subcutaneous injection of magnesium sulphate. In urgent conditions or when the subcutaneous method fails the intraspinal or even the intravenous route should be used. Morphine sulphate, in addition to magesium sulphate, may aid at times. Careful personal observation is necessary in order to judge the dose and method of administration of magnesium sulphate.
4. The wound of infection should be opened and cleaned, and air should be allowed to reach it. Tincture of iodine should be used locally. Serum should be injected at the site of the wound to block the progress of the toxin.
5. An intramuscular or subcutaneous injection of serum should be given on the eighth or ninth day after the beginning of the treatment, in order to keep up the prophylaxis.
6. Fluids and nourishment should be supplied, and careful nursing is essential.

A Study of the Efficacy of Certain Antidotes in the Treatment of Acute Bichloride of Mercury Poisoning.—W. H. Ziegler (*Journal of Laboratory and Clinical Medicine,* January, 1925) used dogs and rabbits in this work, in which bichloride of mercury and the antidote, having been dissolved in sterile normal saline solution, were injected into a branch of the vena saphena parva on the lateral face of the leg. The author says that the minimum lethal oral or intravenous dose of bichloride of mercury for the dog cannot be based upon the weight of the animal. The lethal oral dose of bichloride of mercury for the dog is two hundred mg. (about three gr.) and the minimum lethal intravenous dose forty mg. Calcium and sodium sulphides, dissolved in water and administered by mouth grain for grain, are effective antidotes for acute bichloride of mercury poisoning, if administered before gastrointestinal symptoms have occurred. When a total dose of forty mg. of bichloride of mercury is injected intravenously, calcium sulphide, sodium sulphide or sodium iodide is of no value as an antidote administered either orally or intravenously. Mucilage of acacia will prevent the corrosive action of bichloride of mercury and delay the absorption. In considering the treatment Ziegler states that if the patient is seen immediately after taking the bichloride of mercury, washing out of the stomach with a 1-1000 unfiltered solution of calcium sulphide is the best treatment, followed by the administration of about 300 c. c. of mucilage of acacia, U. S. P. If vomiting has already occurred, this same treatment should be used, but if other gastrointestinal symptoms are present, calcium sulphide is contraindicated. The stomach should be washed out carefully and quantities of mucilage of acacia given both by mouth and by high colonic injection. A mild cathartic should be given. If anuria is present, efforts should be made to restore this function. A mixture of acetate of potash, caffeine citrate and infusion of digitalis should be given every four hours for several days. The author does not believe that a satisfactory antidote has been found which when injected intravenously will change the bichloride into a less corrosive salt.

Iodine Treatment of Goitre.—Eugen Bircher (*Klinische Wochenschrift,* April 16, 1925) advances the following basic principles for the future nonoperative treatment of goitre: 1. The careful use of iodine. 2. The injurious byeffects of iodine must be minimized or prevented by the use of counteracting remedies, such as calcium and quinine, and possibly phosphorus. 3. In the large group of individuals who show an idiosyncrasy to iodine, the iodine must be entirely replaced by other remedies, among which silica and phosphorus seem to be the most promising; possibly other halogens (bromine) or the metalloids (arsenic and mercury) may also be of use. 4. In general, a varying combination therapy with or without iodine, with quinine and its derivatives, silica and phosphorus, is advisable in goitre, each case of which must be judged individually.

Effect of Potassium Oxalate on Blood Sugar Determinations.—Henry J. John (*Journal of Laboratory and Clincal Medicine,* September, 1925) found that the quantity of potassium oxalate put in tubes for blood sugar determinations, to prevent clotting of the blood, bears a definite relation to the blood sugar determination. As the amount of oxalate is increased, the blood sugar content figure is decreased in both diabetic and nondiabetic bloods. Since the variation in the blood sugar estimation is small when the amount of oxalate varies between fifteen and thirty mg., for routine work this amount is suggested.

The Ketogenic Diet in the Treatment of Epilepsy.—M. G. Peterman (*Medical Clinics of North America,* January, 1925) starts the ketogenic diet abruptly. The patient is given a diet of carbohydrate 50 gm., protein 25 gm., and fat 70 gm. for one or two days. He is then given carbohydrate 40 gm., protein 20 gm., and fat 80 gm. Following this, on the fourth or fifth day, the diet is modified to carbohydrate 20 gm., protein 20 to 30 gm., and fat 92 gm. If there has been no nausea or emesis, the patient is then put on his full diet prescription, which consists of 10 to 15 gm. of carbohydrate a day, 1 gm. of protein for each kilogram of body weight, and fat for the remaining calories. (Excessively obese patients require special consideration). The total caloric intake should not exceed the actual metabolic requirements. The caloric requirement is easily calculated from Wilder's chart. Thirty to fifty per cent. is added to the basal metabolic requirement. Provision is made for the vitamines and salt.

Perineural Injections of Antipyrin.—F. Högler (*Wiener klinische Wochenschrift,* January 15, 1925) says he has obtained some good results in acute cases of sciatica with perineural injections of antipyrine. The technic, if strictly adhered to, is devoid of all complications. It is described as follows:

The solution is made by adding three to five grams of antipyrin to ten c. c. of distilled water and one c. c. of a one per cent. solution of novocaine is added. This solution is injected at one time perineurally at the most tender points over the sciatic nerve. The site of injection may be anesthetized with a drop of carbolic acid. The injection is made with a not too thin needle, ten cm. long, after palpating for the nerve. The piercing of the nerve is announced by a lightninglike pain in the toes. When this happens one is sure that no harm can result from the injection, and the needle should then be slightly withdrawn, and the injection made. This form of treatment often helps when nothing else will.

Antimicrobic Properties of Various River and Sea Waters.—F. Arloing, Sempé and Chavanne (*Bulletin de l' Académie de médecine,* February 17, 1925) report investigations on the antimicrobic power of various samples of river and sea water on bacteria of the intestinal group. Striking qualitative differences in the antibacterial properties of different rivers were noted. Thus, the antityphoid property was predominant in the waters of the Rhône and Isère; the antiparatyphoid A property in those of the Isère and the region of Grenoble, and the anti-Shiga property in water from the Bay of Havre. The anticolon bacillus property proved the most widespread, and was met with in particular in somewhat rapidly flowing streams or the most highly polluted waters such as those of the Saône, Seine and port of Havre. The water of a stream was generally more strongly antimicrobic when obtained below a city than above it. Rises of the stream level sometimes increased or distributed the antimicrobic property. The latter shows marked diminution and a tendency to disappear in water filtered through a porcelain filter and kept in darkness in a sealed tube for a month. That time weakens the bacteriophage is well known. Water from springs shows less bactericidal power than river waters polluted through having coursed for some distance in the open. Melted clean snow from the col de Porte, at an elevation of 1,350 metres, showed very intense lysis of the paratyphoid A; intense, of the typhoid bacillus; strong, of the Shiga, and none, of the colon bacillus and paratyphoid B. The writers are inclined to ascribe the lytic action of waters to the presence of a polyvalent bacteriophage rather than to nonspecific causes. In favor of the bacteriophage is the fact that dilution does not present lysis, and that lysis is enhanced under the same conditions as have a like effect on d'Herelle's organism. The variation in action on different bacterial species, the weakening with lapse of time, etc., also support this view.

Psicaine: An Artificial Cocaine.—E. Watson-Williams (*British Medical Journal,* January 3, 1925) states that psicaine is the acid tartrate of an artificial isomer of cocaine. It is soluble in water, giving a definitely acid solution. The solution is not harmed by brief boiling. It requires the addition of salicylic acid to prevent the growth of moulds. Used in the nose, seven per cent. psicaine solution gives anesthesia identical with that produced by five per cent. cocaine hydrochloride solution. The same "shrinkage" as is seen with cocaine is found in using psicaine. The experimental toxicity of psicaine in five per cent. solution is three quarters that of cocaine hydrochloride; the toxicity of the new alkaloid is therefore identical with that of cocaine.

It is probable that excitement, fainting, etc., will not be so readily produced by psicaine as by cocaine; it may therefore be useful in susceptible persons. For the same reason psicaine should not be used except by those well accustomed to use cocaine; the dose of psicaine should not exceed that found safe with cocaine. Psicaine is, therefore, a "dangerous drug."

A Clinical Study of Quinidin Therapy.—Herman H. Riecker (*American Journal of the Medical Sciences,* August, 1925) says that the use of quinidin sulphate is justified and seems indicated in all cases of auricular fibrillation, except in those in which there are signs of recent embolism, marked decompensation of the heart or early appearance of the symptoms of cinchonism. Both the temporary and permanent conversion of the fibrillation to a normal sinus rhythm by the drug seems to be favorably influenced by the presence of a delayed conduction time at the auriculoventricular junction. The careful management of cases with regard to exercise, mental excitement and fever during quinidin administration greatly facilitates the favorable action of the drug. The administration of quinidin is most effectual when given continuously through the day and night as suggested by the work of Lewis. The use of digitalis to maintain the rhythm after its conversion seems to be even more important than that of quinidin in chronic auricular fibrillation.

Therapeutic Value of Coramine.—K. Guth (*Therapeutic Gazette,* September 15, 1925) states that coramine is a preparation the action of which is in every respect equal to that of camphor. Its advantage seems to lie in the fact that it is soluble in water.

Clinical Value of Ephedrin.—T. Grier Miller (*American Journal of the Medical Sciences,* August, 1925) says that ephedrin has general physiological effects in man similar to those produced by epinephrin. It has, however, distinct practical advantages over epinephrin because of its more prolonged action and the fact that it can be administered effectively by mouth.

In doses of fifty to one hundred and twenty-five mg., given orally or subcutaneously, ephedrin sulphate usually raises the systolic and diastolic blood pressure and decreases the pulse rate for a period of several hours. It also stimulates the heart action and has a tendency to increase the output of urine. It sometimes increases the basal metabolism.

Its administration caused temporary improvement in two cases of Addison's disease, gave relief in the paroxysmal attacks of certain cases of asthma, relieved the subjective sensations in a case of urticaria, caused a disappearance of urticarial lesions in a case of serum disease, and produced marked temporary improvement in a case of circulatory collapse and steady and continuous improvement in a case of circulatory failure incident to myocardial disease and the evacuation of an overfilled urinary bladder.

In a single case of complete heart block it produced an increase in both the auricular and the ventricular rates and caused alterations in the character of the electrocardiographic tracings.

Locally applied to the nasal mucous membrane, ephedrin causes prompt contraction which persists for more than three hours and has no local irritant effect.

It is believed that the widest range of usefulness of ephedrin will be found in the treatment of asthma and of acute circulatory depression, and in the management of certain congestive nasal conditions.

Oral Administration of Large Quantities of Glucose.—T. Izod Bennett and E. C. Dodds (*Lancet,* February 28, 1925) found that large quantities of glucose can be administered in palatable form and at a low cost. Its exact chemical composition is difficult to determine, but it is shown to contain arsenic in negligible traces and to have a caloric value of about one thousand large calories a pound. Normal persons can assimilate quantities of two hundred to five hundred grams in one does, without passing more than a trace of sugar in the urine. The main effects on subjects who took five hundred grams in this manner were: 1, diuresis; 2, a rise in blood pressure not greater than what occurs after a normal meal; 3, no change in the respiratory quotient; 4, a marked hypnotic effect in two cases. Large quantities of sugar taken in this manner appear to be detained and diluted in the stomach. There is also evidence of a dilution of the blood.

Large quantities of glucose have been added to the diet as a therapeutic measure in many clinical cases, particularly in acute infections and in cases with marked undernutrition. Distinct benefit appears to have resulted and no ill effects have been observed.

Ethylene.—L. F. Sise (*Boston Medical and Surgical Journal,* February 12, 1925) gives a description of the physical and physiological properties of ethylene, which are first brought to notice in 1922 ,together with its uses, the clinical results produced, and the precautions to be observed. It is an anesthetic gas dispensed compressed in steel cylinders. Sise says that ethylene is the purest anesthetic which we have today in that for a given depth of anesthesia it produces less effect on the body than any other known anesthetic. It can be used with a considerably higher mixture of oxygen than can nitrous oxide and it gives better relaxation. But it does not give relaxation which can compare with that of ether and therefore it cannot replace ether for abdominal surgery with subjects who are in good condition. Its one serious drawback is its inflammability; and this should be carefully guarded against. It is preeminently the anesthetic for the handicapped and "bad risks" patients. It is undoubtedly the best general anesthetic which we know today for such patients.

The administration of ethylene is very similar to that of nitrous oxide and is comparatively easy for those who are already skilled in the use of the earlier gas. The main points to be emphasized are:

1. The percentage of oxygen may be higher, usually about fifty per cent. or more higher than with nitrous oxide. The color of these patients is sometimes spoken of as an unnatural pink, suggesting a combination with hemoglobin, though no such combination has been shown to exist.

2. The patient may be run somewhat lighter. This is due to the fact that its analgesic properties are decidedly greater than are those of nitrous oxide. Thus, under ethylene a patient may be pink and have an active lid reflex and still make no movement at the beginning of operation, as so often happens under nitrous oxide even though he is slightly cyanosed and snoring.

3. More care should be used not to overdose the patient, especially during induction. This was a personal impression which the author received from clinical experience, and which he has not seen mentioned by other observers, although Gwathmey does say that this gas must not be pushed, and several observers have mentioned pallor under its use.

4. Eye signs closely parallel those under nitrous oxide.

5. The breathing is somewhat slower and less vigorous.

6. Ethylene freezes in the valves of the apparatus much more readily than the present anhydrous nitrous oxide, so that some sort of heating device is usually necessary. This must *not* be a lamp, but may be an electric heater or hot water bag, because it is inflammable.

Treatment of Varicose Veins of the Leg by Injections.—John Dunbar (*British Medical Journal,* January 3, 1925) reports his results in thirty cases of varicose veins of the leg treated by injecting these veins with sodium salicylate. The method is the following:

The susceptibility of the patient is first tested by injecting about one c.c. of twenty per cent. solution into the veins. If there is no reaction next day a stronger solution is used, but it is recommended not to go above forty per cent. Several sections can be injected at the same time, but the total dose of sodium salicylate should not exceed three gm. No constricting band is used. The patient, as a rule, complains of a severe pain coming on immediately after the injection and lasting about one minute. If a cure does not result, the treatment can be repeated. About a week afterward, one or two findings indicate if a cure is going to be effected: 1, a hard mass is felt in the vein at the seat of injection; 2, in addition, the thrombosis extends down the vein in some cases. In no case was extension up the vein noticed. Later, the vein becomes replaced by a fibrous cord.

On account of the severe pain after the use of sodium salicylate, the author tried mercury perchloride (1 in 500 solution). There is less pain, less swelling of the vein, and the results are as good. Under no circumstances should an inflamed vein be injected. The results from the injection treatment are not claimed to be better than those obtained with operation, or that the liability of the return of the varicose condition is less (in fact the percentage of recurrences might be expected to be higher), but the circulation in the legs is certainly improved, and consequently the strength of the lower extremities is increased without incapacitating the patient in any way.

Peptone and Serum Peptone in Asthma.—A. G. Auld (*British Medical Journal,* March 7, 1925) states that peptone acts by changing or desensitizing the interior of the body, so that the disease has little chance of attacking. Some persons are better for this purpose than others in whom the antianaphylactic reaction is defective or wanting. Those who have had much disease, and especially suppurative lesions, are resistant. The peptone is usually given intravenously and slowly, and when the patient is as free from asthma as possible. The intravenous injection is absolutely safe, even in the youngest child. In some cases, the peptone may be given intramuscularly in doses of 7.5 per cent. especially in children and old weak people. When this does not act satisfactorily, however, the intravenous use of the five per cent. solution should be made.

Intravenously, five minims of the five per cent. solution is an excellent beginning, continued twice a week by an increase each time of three minims, until twenty-six minims are reached. Continue this last dose for two more doses, which makes the tenth dose. By this time it will be found that there are three classes of cases: 1, the patient may feel surprisingly well; 2, he may be much improved; 3, he is improved only a little. In the first class it is only necessary to increase the dose by about four minims for two more doses, and then giving weekly twenty-five, twenty, fifteen, and ten minims, when the treatment is finished. In the others, if the patient is standing the peptone well, the dose is increased to two c. c., then two point five c. c., or even to three c. c.; then reduce weekly, by about ten minims to thirty-three, twenty-three, and thirteen minims. If an attack of asthma intervenes, reduce the dose considerably, say to twenty-five minims. Continue this for two or three weeks, then reduce weekly to fifteen and ten minims. When the patient is weak, the dose must be kept low.

When bronchitis is present a vaccine may be considered. In this case first give peptone for about two weeks, which will render the patient tolerant to vaccine, to which asthmatics are often very sensitive.

When human blood is incubated with peptone in vitro a change occurs in the serum and the peptone which renders the mixture highly suitable for the treatment of asthma. It has been found that two or three c. c., of the twenty per cent. mixture does not produce reactions in man as a rule. The dose is as follows, when the patient is as clear of asthma as he can be: 0.5 c. c., 1 c. c., 1.5 c. c., 2.0 c. c., 2.5 c. c. 3.0 c. c., given twice a week intravenously. If the higher doses produce any reaction, reduce it slightly. Then give 2.5 or 3.0 c. c. for two weeks, and 1.5 c. c. one week, and 1.0 c.c. the next week. The latter doses are given once a week. This is, of course, only a general treatment and great variations may be required.

NEUROPSYCHIATRY

Amaurotic Family Idiocy.—J. Epstein (*Archives of Pediatrics,* April, 1925) states that amaurotic family idiocy is a disease of an indefinite etiology, a definite pathology, a uniform clinical course and a fatal prognosis. There is no definite evidence of an hereditary taint, a congenital abnormality, or a latent infection that would throw any light on this destructive disease. That it is found exclusively among Jewish children is a biological enigma. The onset of the disease and the subsequent events in the life and death of the child indicate a degenerative pathogenesis of the central nervous system, especially of the nerve cells and ganglia. While it manfests itself at the age of about six months, the exact time the illness begins is quite unknown. The symptoms are those of a general retrogression with a gradual and constant disintegration of body and mind. The age of onset, the peculiar facial expression of idiocy and blindness, the hyperirritability and the spasticity, and the cherry red spots make the diagnosis. The disease is chronic and relentless in its course, leading to a fatal termination.

Treatment of General Paralysis by Malaria.—T. Wishart Davidson (*British Medical Journal,* March 7, 1925) states that the malaria treatment of general paralysis is justifiable and hopeful, provided the patients are in fair physical health. The earlier the case the better the prognosis. The treatment is contraindicated when the patient is likely to have a fatty heart or where there is poor physical health. The administration of strychnine, with digitalin or strophanthine to steady the heart, is advisable and helpful, especially during the later pyrexial attacks. Relapses of malaria do occur, but practically only in mosquito infected cases. Compared with the infection by the inoculation of trophozoites, it would appear that infection by the sporozoites from mosquito produces a parasite which readily becomes resistant to the immune body, and thus relapses frequently occur. A previous attack of malaria would appear to induce partial immunity; although scanty parasites appear in the peripheral blood, there is no rise of temperature.

The malarial treatment was carried out in fifty-three cases of general paralysis. Complete remissions occurred in seven cases; nine patients improved mentally and physically, and seventeen showed slight mental improvement with a considerably improved physical condition.

Encephalitis Lethargica.—C. M. Hinds Howell (*British Medical Journal,* March 7, 1925) states that there is unfortunately no specific treatment that has proved its value for encephalitis lethargica. He is convinced of the importance of recognizing the early ambulatory type of the disease and putting the patient to bed. Treatment on general lines must be carried out in so far as diet and regulation of the bowels are concerned. Most of the patients suffer from obstinate constipation. A gargle of potassium permanganate may well be used by the patient, if he is in a condition to do so—and by those in contact with him.

With regard to any special therapeutic measures, it is safe to say that none has so far offered convincing evidence of success. Hexamine has had an extended trial by the mouth, hypodermically, and intravenously, but the results have been disappointing. In some cases serum, either from the patient, or simple horse serum, and in some cases antimeningococcal serum, has been used apparently with advantage. Repeated lumbar puncture has been recommended although it is difficult to see on what logical grounds. The author has, however, seen an improvement in the depth of the lethargy follow a lumbar puncture. Insomnia, delirium, or excitement can be dealt with on ordinary lines. The residual symptoms or sequelæ are extraordinarily resistant to every therapeutic measure.

The Permeability of Meninges to Uranin as a Method in the Diagnosis of Meningitis.—Otto Jervell (*British Medical Journal,* January 31, 1925) in a preliminary communication, concludes that uranin in doses of 0.03 gram to the kilo of body weight does not enter the cerebrospinal fluid, or does so only in small quantities if the meninges are not infected. In meningitis the coloring matter enters the fluid in easily demonstrable quantities. If, therefore, by lumbar puncture threee hours after uranin has been given in the doses stated, the spinal fluid shows a distinct greenish fluorescence, we can with great probability diagnose meningitis without making other investigations of the spinal fluid. If the spinal fluid shows no fluorescence, meningitis can with certainty be excluded.

It is not possible to decide what form of meningitis, if any, is present. The passing of the coloring matter into the spinal fluid merely indicates the greater or lesser permeability of the meninges. In meningitis comitans, circumscripta, etc., the uranin does not enter the fluid, or does so in relatively small quantities, even when the pleocytosis is present. Opinions differ as to whether it is correct to designate these conditions meningitis, but this is doubtless chiefly a dispute about words.

Possibility of Restoring Movement to a Paralyzed Vocal Cord by Nerve Anastomosis.—Lionel Colledge (*British Medical Journal,* March 21, 1925) conducted an experimental inquiry on the effects of an anastomosis of the recurrent laryngeal nerve with other nerves.

Although a nervous connection may be reëstablished by a recurrent laryngeal vagus anastomosis, it is quite useless to expect return of spontaneous movement in the corresponding vocal cord.

The results of experiments with the descendens noni show that, as in an anastomosis with the vagus, the muscles controlling the movements of the vocal cord become innervated, but no movement occurs in the cord because the appropriate impulse does not pass along this route.

Experiments on anastomosis with the phrenic nerve, however, is capable of reproducing the normal movements of the vocal cords in tranquil respiration. The movement of adduction, induced by partial asphyxiation reappears before that of the abduction, which corresponds to the weaker extensor movement in the limbs. It is shown from these experiments that spontaneous respiratory movements can be restored to the vocal cord by an anastomosis between the recurrent laryngeal and the phrenic nerves. The entire trunk of the phrenic is not necessary, and probably it will be sufficient to use half the trunk, as in a lateral anastomosis, or one of the roots arising from the cervical nerves.

Pathogenesis of Various Forms of Tetany.—Otto Teznor (*Monatsschrift für Kinderheilkunde.* December 1924) found that, administered to the same patient, calcium lactate acts just as favorably upon the tetanic symptoms as ammonium chloride; the action of the monacidosic calcium lactate shows that every administration of calcium leads to the increase in the number of the calcium ions even with a constant acidity of the blood, even if the action of the nonionized portion of the blood calcium is not recognized It is impossible to determine a definite difference between the hydrogen ion concentration and the total acidity of the urine in healthy and tetanic children brought up on cow's milk. In practice, ammonium chloride is preferable to calcium lactate because of the more rapid and energetic action.

If a hyperventilation tetany is produced experimentally in a patient, and if in a second experiment an infusion of a four per cent. solution of bicarbonate is given, the latter produces no tetany if the produced alkalosis is just as high as it is in the respiratory tetany. This shows that other factors besides the alkalosis are responsible for the nervous irritability. It is possible that the hypertonia produced in the blood by the infusion acts in an inhibitory way and thus prevents the occurrence of the tetany.

The Femoral Reflex, a New Symptom of Tetany.—Géza Petényi (*Monatsschrift für Kinderheilkunde,* September, 1924) describes a new symptom of tetany in children, which he calls the femoral reflex. If the anterior surface of the thigh between the upper and middle third is tapped with the percussion hammer, the quadriceps muscle contracts and the leg makes a jerking movement forward, just as in the elicitation of the patellar reflex. The latter is obtained by tapping on the lower part of the tendon. If the reflexes are exaggerated, it is often possible to elicit it by tapping over the part of the tendon lying over the patella. It can readily be shown that the femoral reflex has nothing in common with the patellar reflex.

Among thirty-seven cases of tetany the femoral reflex was found to be present in sixty-eight per cent of the cases. It is of value, not only because it is demonstrable in a large number of cases, but also because it is simple and does not produce any pain. It has also occasionally been found to be the decisive factor in the diagnosis. This phenomenon occurred only three times in a series of 240 cases of children, some of which were healthy and some affected by other diseases. This reflex has been observed only during the first three years of life, and never in older children or in adults. The oldest child in which it was observed was two and a half years of age.

The Histopathology of Postencephalitic Parkinson's Syndrome.—Leslie B. Hohman (*Bulletin of the Johns Hopkins Hospital,* June 1925) in a case of postencephalitic Parkinson's syndrome, found the histological picture, except for the changes due to fever and poor fixation, to consist in evidence of moderate cell degeneration in the corpus striatum with an intact globus pallidus; a severe and profound destruction of the substantia nigra; focal areas of loss in the cerebral cortex in both cells and fibres; evidence of definite but very slight inflammatory changes; and very little glia increase. In summarizing eleven cases previously reported, to which the present one is added, Hohman states that the lesions in this condition are an essentially chronic degenerative parenchymatous process with constant persistent evidences of inflammatory reaction; widespread distribution of the lesions in every part of the central nervous system; and the region of maximal and constant involvement is the substantia nigra.

Injuries to the Musculospiral Nerve.—W. R. and Andrew R. MacAusland (*American Journal of the Medical Sciences,* January, 1925) say that the nerve may be injured in three ways: The nerve trunk may be crushed without damage to the sheath; the nerve may be completely divided; power may be lost through the involvement of the nerve in scar tissue or callus.

Early recognition and treatment of nerve injuries in connection with fractures and severe traumatisms is very important. We may expect a perfect result in cases of immediate suture of the nerve. While intervention in cases of old standing has given good results, it is the general opinion that the chances of success are lessened after the elapse of a long period of paralysis.

Simple freeing of the nerve is very often the only procedure necessary to relieve the condition. In cases of complete division of the nerve or in cases in which there is need to excise a portion of it because of a fibrous formation, nerve suture has been found the most satisfactory procedure for the approximation of the nerve ends. If the nerve suture does not relieve the condition, or if the case is not reparable by the various methods of manual stretching, neurotomy or nerve grafting, then tendon transplantation gives satisfactory results.

After severance of a nerve, healing begins spontaneously. In cases of nerve suture function develops in the same manner as in spontaneous healing. After secondary suture sensibility returns early. Muscle control usually appears in the course of two to four months and is complete in from six to nine months.

Tumors of the Cerebrum.—H. S. Souttar (*British Medical Journal,* March 21, 1925) shows that those tumors of the cerebrum which are accessible to surgery give rise in many instances to symptoms characteristic of their locality, though when the case is actually seen these are only too often masked by those of general intracranial pressure.

The commonest tumor of the cerebrum is a glioma and its removal is impossible. The relief which may be obtained by decompression is, however, sometimes very considerable. Although a glioma cannot be removed it may degenerate in the centre and become cystic, and in such a case it is sometimes possible by aspiration of the cyst to give considerable relief to the patient. If the cyst is at all superficial and can be treated with formalin the relief may extend over a considerable period; in some of these cases the introduction of radium has given good results. In such cases a decompression not only relieves the pressure but it enables the cyst to be aspirated with facility.

The only removable tumors which are at all common in the region of the cerebral hemispheres are the endotheliomata. These arise from the inner surface of the dura, probably from the lacunae of the anterior longitudinal sinus. Sometimes they are firm, rounded, fibrous tumors, often, however, with central degeneration; sometimes they are soft and diffluent. They may have a pedicle or they may be sessile on the inner surface of the dura. The bone over them is very vascular, and they have a curious power of stimulating its growth, so that external bony tumors may appear on the skull. They may, indeed, invade the bone, with which they thus become indissolubly connected, but in no circumstances do they invade the brain; they press into its substance, and their removal may at first leave a large cavity, but in a few moments the brain returns to its normal position and the cavity is entirely obliterated. Theoretically these tumors should be completely removable and should never recur, but this result is not always obtainable. In the soft type the tumor may break up so far that there can be no certainty of its complete removal, and in the sessile variety its connections with the superior longitudinal sinus may be so complete that only a resection of the sinus, with the grave risks which that involves, could ensure total ablation. Although a complete cure is effected by surgical interference in only a limited number of cases, there are many in which considerable relief is secured. The most important factors in success are early diagnosis and precise localization.

Peroxidase Reaction in Epidemic Encephalitis.—Sato and Yoshimatsu (*American Journal of Diseases of Children,* March, 1925) render their report on a characteristic feature of the blood picture of epidemic encephalitis which they believe will prove extremely valuable in diagnosis and prognosis. They produce evidence that the peroxidase test (copper method) of Sato and Sekiya on myeloid leucocytes is negative (that is, all the myeloid leucocytes fail to take the stain) in an acute case of typical epidemic encephalitis (with lethargy, ophthalmoplegia, and asthenia or fever), but is positive (that is, all the myeloid leucocytes take the stain) in any other disease, whether of infectious or noninfectious origin. This is true only of the peroxidase test as done by the copper method, which they believe is superior to other peroxidase methods in simplicity, in sensitivity, in constancy of color and its contrast with the unstained red cells, and in the durability of the reagents used. Fixation of the blood smears is unnecessary.

The technic of this reaction is as follows: The reagents used are three in number: 1. Solution A, consisting of 0.5 per cent copper sulphate solution. 2. Solution B is prepared by rubbing 0.2 gm. of benzidin with a few drops of water in mortar. Add 200 c. c. of water at room temperature and filter, and then add 4 drops of hydrogen peroxide (3 per cent). In a brown bottle this solution will last a year, although precipitation will begin to occur soon after preparation. 3. Solution C (counterstain) may be a 1.0 per cent aqueous solution of safranin, or neutral red, or carbolfuchsin (one part in five).

To a fresh, dry blood smear apply solution A. Pour off most of it and apply solution B for two minutes. Then wash thoroughly with water. The peroxidase granules of the leucocytes stain a deep bluish green, which does not fade. For counterstaining do not rinse after pouring off the peroxidase stain, but add solution C at once and let stand for two minutes before washing. The cytoplasm of the myeloid leucocytes stains blue by this method, whereas the lymphoid elements show no trace of blue or green but appear red because of their redstaining nucles. Copper salts are superior to any other salts.

During convalescence from encephalitis, the reaction changes from negative to positive. The oxidase reaction of Winkler and Schultze on myeloid leucocytes of the blood, over which the peroxidase reaction is an improvement, is always positive in all diseases, including acute epidemic encephalitis. Animal experiments have located the brain area controlling the peroxidase reaction in the corpora striata, puncture of which or severe inflammation of which, produces a negative peroxidase reaction.

In prognosis, the peroxidase reaction is valuable, being more favorable when positive and less favorable when negative. The length of staining time with solution B necessary to produce a positive reaction is directly proportional to the gravity of the prognosis.

Recovery of Treponema pallidum from the Spinal Fluid of a Patient with Syphilitic Meningitis of the Neurorecurrence Type.—Jarold E. Kemp and Alan M. Chesney (*Bulletin of the Johns Hopkins Hospital,* March, 1925) report a case of syphilitic meningitis of the neurorecurrence type in which treatment was begun while the patient was in the seronegative primary stage of the disease, and about fourteen days after the appearance of the lesion. None of the usual secondary manifestations occurred at any time. Four months after the last treatment the symptoms of an acute syphilitic meningitis first appeared and one month later the patient applied for treatment. At this time three c.c. of his spinal fluid, which was positive to all tests, was inoculated into a rabbit's testicle. About sixty-eight days later the animal developed an orchitis and fourteen days later, or eighty-two days after inoculation, specimens of Treponema pallidum were demonstrated in the affected testicle.

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Medicolegal Notes.

LICENSES TO PRACTISE CHIROPRACTIC IN NEW JERSEY WITHOUT EXAMINATION TO CERTAIN WORLD WAR VETERANS

The New Jersey Court of Errors and Appeals holds, Kinlin v. State Board of Medical Examiners of New Jersey, 127 Atl. 522, that it was the intention of the New Jersey Legislature, by Act March 22, 1923, (P. L. p. 343) § 1, amending Act March 31, 1921 (P. L. p. 268) § 11, to provide that any person who served in the military or naval forces of the United States in the World War, and who on March 22, 1923, was a student or in training in a legally incorporated college of chiropractic under the jurisdiction of the federal Board of Vocational Training, upon being graduated from any such institution and furnishing evidence thereof satisfactory to the board of medical examiners, should without any further qualifications or requirements be entitled to have a license, issued by the board, to practise chiropractic.

AGREEMENT TO PAY FOR PRIOR TREATMENT TO ADULT SON IN CONSIDERATION OF FURTHER TREATMENT HELD NOT WITHIN STATUTE OF FRAUDS

In an action for $188 for treating defendant's adult son and his son's wife, it appeared that $102 was for treatment without any prior promise of defendant to pay therefor, and $86 was for treatment after the physician had informed defendant that he would not treat his son any further unless he would agree to pay not only for his services from that date, but also the old bill of $102, to which, he alleged, the defendant agreed.

The Texas Court of Civil Appeals held, Evans v. Shaw, 268 S. W. 1037, that as to the $86, plaintiff, in treating defendant's son, was extending credit to defendant, and defendant's obligation to pay was an original primary obligation. It was defendant's own debt and the promise to pay for the services rendered after the promise was made did not come within the statute of frauds. As to this plaintiff was entitled to recover.

As to the $102 it was held that plaintiff extended credit solely to the son, and this much of the account was a debt against him alone, and continued such for nearly a year, up to the time of defendant's verbal promise to pay it. The question was whether defendant's promise to pay this part of the debt was within the statute of frauds. The son was twenty-five years old, married, not dependent upon his father, nor a member of his family, and there was no legal obligation upon defendant's part to furnish him medical treatment; "but," the court said, "at the time of said conversation between appellant and appellee (defendant and plaintiff), appellant's son was a very sick man, and died a few days later. The son was in a helpless condition, unable on his own responsibility to secure treatment by appellee. There was a moral obligation and duty on the part of appellant to secure such treatment, and no doubt appellant felt very keenly this moral obligation on his part, and so, for the purpose, not primarily of paying or securing his son's debt, but to subserve a purpose of his own—the performance of this moral obligation to his son—he agreed unconditionally to pay not only for future treatments, but also the old bill of $102."

There is a conflict in the decisions, in Texas and the other states, as to whether or not a promise to pay the debt of another is within the statute of frauds. Under the settled rule in Texas, however, the court held that defendant's promise having been made to subserve a purpose of his own, and not primarily to settle his son's debt, such promise was not within the statute of frauds, and created a primary obligation on defendant's part for the $102, as well as for the future treatments. Judgment for plaintiff was affirmed.

NECESSITY FOR LICENSE—"PRACTISING MEDICINE" DEFINED

The West Virginia Supreme Court of Appeals holds, State v. Morrison, 127 S. E. 75, that one who opens an office and announces to the public in any way that he is ready to treat the sick and afflicted, and has actually treated cases of paralysis, constipation, rheumatism, neuritis, sick headache, kidney trouble, lumbago, liver trouble and divers other diseases by adjustment of the segments of the spinal column according to the chiropractic method of treating human ailments and infirmities, is "practising medicine and surgery," as defined by section 12, c. 11, Acts 1915. The provisions of that statute requiring examination of and license to a person before he can lawfully practise medicine and surgery as therein defined, and imposing a penalty for practising without such license, are held to be applicable to a chiropractor who treats human ailments and infirmities for reward as such, and are not in contravention of sections 1 and 10, article 3, of the state Constitution, nor of the federal Fourteenth Amendment.

The court quotes with approval the definition in a similar case, Commonwealth v. Zimmerman, 221 Mass., 184, as to what constitutes the practice of medicine, as follows: "Medicine relates to the prevention, cure and alleviation of disease, the repair of injury, or treatment of abnormal or unusual states of the body and their restoration to a healthful condition. It includes a broad field. It is not confined to the administering of medicinal substances or the use of surgical or other instruments. It comprehends a knowledge, not only of the functions of the organs of the human body, but also of the diseases to which these organs are subject, and of the laws of health and the modes of living which tend to avert or overcome disease, as well as of the specific methods of treatment that are most effective in promoting cures."

KANSAS PRIVILEGE STATUTE HELD NOT APPLICABLE TO WORKMEN'S COMPENSATION PROCEEDINGS

The Kansas Supreme Court holds, Doty v. Crystal Ice & Fuel Co., 235 Pac. 96, that the provision of the Kansas Code, R. S. 60-2805, to the effect that physicians are incompetent to testify concerning certain matters does not create a privilege personal to the physician.

It is also held that the purpose of the Workmen's Compensation Act, the nature of the inquiry to determine liability, and the statute itself (R. S. 44-515, 44-519) preclude the application of R. S. 60-2805, in so far as it relates to the testimony of physicians, from having any application to claims for compensation under the Workmen's Compensation Act.

INFECTION FROM REMOVAL OF PIMPLE WITH INFECTED INSTRUMENT HELD ACCIDENT

The Indiana Appellate Court holds, James v. State Life Ins. Co., 147 N. E. 533, that the death of an insured from infection caused by the removal by a barber of a pimple from the insured's face with an infected blackhead eradicator resulted from bodily injury sustained directly through external, violent and accidental means within the meaning of an insurance policy.

A CERTIFICATE HELD NOT A "PRESCRIPTION"

The Texas Court of Criminal Appeals holds, in a prosecution for transporting intoxicating liquor, Gaudy v. State, 268 S. W. 951, that a document from a physician stating: "This is to certify that Mr. —— has had the flu and I recommend that he should use strychnine or whiskey as a stimulant for his heart" is not a prescription.

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Some Indications for Splenectomy*

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Our present limited knowledge of the functions of the spleen, coupled with the fact that it is an organ not essential to life, raises the pertinent question of, Why the spleen? The answer is neither easy nor clear.

Among the various hypotheses offered with regard to the function of the spleen, those receiving greatest consideration are that the spleen as a blood forming organ is closely related to the bone marrow, this relationship being dependent upon a hormone elaborated by the spleen and having a stimulating effect on bone marrow. The rôle of the spleen in the formation of red blood cells in embryonic life is generally admitted, but normally after birth this activity is supposed to stop, the formation of red cells in the postnatal spleen being a reversion to embryonic conditions, in other words a pathological process, or perhaps the response to a pathological process somewhere else. As to the fate of the red blood cells in the spleen, the worn out cells are supposed to be destroyed by the spleen and the liberated hemoglobin may be carried to the liver and there transformed into bilirubin, or their destruction may be partially brought about by phagocytosis, but the precise manner in which the destruction is completed is not known. According to some investigators the liberated hemoglobin may be manufactured into bilirubin in the spleen itself.

Of course, one of the ways of studying the function of an organ is to observe the effects of the removal of the organ in question. On this basis we derive only meagre information as far as splenic function is concerned. Both animal experimentation and observation on the human subject show that clinically, splenectomy, when performed for injury, and in early life, does not affect the growth; nor does it necessarily interfere with pregnancy and childbirth; nor does it have any permanent effect on the general health of the adult, except perhaps that it produces a somewhat lowered resistance to infection, although the latter contention is open to argument.

As to the immediate effect of splenectomy. We are indebted to the careful work of Pearce, Krumbhaar and their associates for much of our information on the physiology of the spleen and what follows its removal. Physiologically, splenectomy mainly produces certain changes in the blood which cause a temporary anemia, an increased resistance of the red blood cells to hemolysis and a reduced tendency to jaundice, which, according to Pearce, is associated with the anemia of splenectomy. Moynihan, on the other hand, attributes it to the loss of ability of the spleen to send what he calls effete iron to the liver. The latter organ thus loses its ability to elaborate properly combined iron for the production of bone marrow and for hemoglobin formation. The reduced tendency to jaundice is also explained by the fact that after splenectomy the destruction of red cells takes place chiefly in the bone marrow, so that the products of disintegration, having a longer route to travel to reach the liver, arrive there in a less concentrated form than when coming from the spleen, so that it requires a much greater increase in hemolysis to reach a state of concentration sufficient to produce jaundice. Jaundice, according to this theory, "would be an index to the *site* of red blood cell destruction rather than its *degree*."

Splenectomy also causes an increased excretion of iron, a decrease of fat in the feces and an increase of fat and cholesterin in the blood, the last named being thought to aid the resistance of the red cells to hemolytic agents. In the course of time, the bone marrow also changes from its normal yellow fatty character to a red cellular hyperplastic type.

It is an interesting fact that any splenic tissue left in the body after splenectomy rapidly increases in size, indeed, reformation of splenic tissue equivalent to a normal spleen in size and appearance has been observed in from fifteen to eight and even less years after removal of the spleen for injury. A compensatory enlargement of lymphoid tissue throughout the body has also been noted. There is an increase in the number of endothelial cells in the lymphoids, which upon administration of hemolytic immune serum may help in the destruction of red cells. A similar phagocytic effect takes place in the Kupffer cells of the liver, suggesting a compensatory function in the liver as well as in the lymph nodes.

This brief outline of some of the changes that follow splenectomy in a measure explains the results of the operation *per se*. We see from it that anatomically and physiologically the spleen apparently derives its importance mainly from its connection with other organs, particularly the liver, which is said to receive

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about thirty per cent. of the blood supply of the body and this directly from the spleen. It is easily conceivable, therefore, why a pathological process in the spleen produces serious interference with liver function and with the constituents of the blood.

We all know that the gross outstanding features of splenic disease are anemia and enlargement of the spleen, and it is no less a matter of common knowledge that splenectomy may and often does establish a clinical cure in certain diseases of the nutritive system, especially of the liver and the blood. The most important of such diseases that carry with them indications for splenectomy are, hemolytic jaundice, particularly the acquired type, splenic anemia in its various forms and stages and sometimes pernicious anemia. A recent addition to this list is purpura hemorrhagica of the thrombocytopenic type.

In pernicious anemia it is only in the early stages that splenectomy offers palliation and occasionally a supposed cure; and again in the rapidly progressive case with marked hemolysis it may be undertaken as a last hope, when everything else has failed.

In the acquired form of hemolytic jaundice and in the splenic anemias the operation has come to be one of distinct value. The relationship between hemolytic jaundice and disease of the liver and gallstone disease is well recognized. The tendency to the formation of gallstones in these cases is explained as being due to the viscosity of the bile, caused by overloading the liver with blood pigment set free by destruction of numerous red cells by the spleen. The remote results of this are seen in the development of cholangitis and finally cirrhosis of the liver. This once more illustrates the interdependence of the organs in the human body. There is also a close relationship between acquired hemolytic jaundice and the jaundice of biliary cirrhosis, in which splenomegaly and anemia also form part of the syndrome. Splenomegaly is nearly always associated with cirrhosis of the liver. The splenic enlargement, in fact, may be palpable before involvement of the liver is recognized. Nevertheless, it is generally conceded that the splenic enlargement is in all likelihood secondary to the pathology in the liver, both of which are probably due to the same factors. In cirrhosis of the liver splenectomy not rarely brings about marked improvement, although the exact reasons therefor are not definitely known, except that perhaps removal of the spleen effects a definite reduction in the quantity of blood brought to the liver. Owing to this well known recuperative power, the liver, though damaged, is thus able to resume enough of its normal function to bring about at least symptomatic relief.

It has been found that in chloroform poisoning the liver is fairly uniformly involved, consequently, if a section is removed it will be representative of the liver as a whole. Whipple found he could destroy about one third of the lobule with chloroform. This means that approximately one third of the liver had undergone necrosis. So great is the recuperative power of the liver, however, that in ten days to two weeks a section removed showed complete restoration of the liver lobule. This means that there was a growth of perhaps 150 grams, in a moderate sized dog in two weeks, a rather extraordinary healing power.

On the other hand, the enlargement of the spleen in certain cases of cirrhosis of the liver may be, not primary, but secondary to congestion. The question of removal of the spleen in these cases then becomes more a question of reducing congestion from the spleen to the liver and conversely, from the liver back into the spleen, than does removal of the spleen for the production of actual cirrhosis causing noxæ in the spleen. A certain number of clinical reports seem to justify this removal from whatever viewpoint it is observed. The exact relationship, however, awaits further investigation. It might be suggested that many of the cases of splenomegaly, with or without cirrhosis of the liver, are possibly phases of one and the same condition, and that the numerous names which at present are given to certain symptom-complexes are merely a cloak for our ignorance in a way similar to that in the days when jaundice was considered a disease and not a symptom, as we consider it today.

Most of the blood going from the spleen, the stomach, duodenum, and upper jejunum is sent to the left lobe of the liver; most of that coming from further down goes to the right lobe. This is because of the fact that the splenic vein meets the superior mesenteric vein at a right angle and that the main trunk of the portal vein is quite short before it divides into the left and right branches. Just as the Mississippi is half muddy for a considerable distance below where the Missouri empties into it, so most of the blood coming from the splenic vein remains on the left side of the portal vein and thus is sent into the left lobe of the liver. It is an old, well known fact that many cirrhoses of the liver begin in the left lobe, and that even in later stages the left lobe in many cases is far more fibrous and involved than the right lobe. It seems fairly reasonable to assume that perhaps the blood supply determines this change, if so, perhaps the spleen is really primarily at fault in helping to produce the cirrhosis, thus justifying the removal of the spleen, especially when it is somewhat enlarged.

In Banti's disease splenectomy has proved to be the only rational treatment, so that the indications for the operation in this disorder require little discussion. The fact that a few cases after the lapse of a number of years show signs of recurrence is, of course, no argument against the operation.

But the operation is not a simple one, the technical difficulties are such as to make it a serious procedure. This is due mainly to the presence of adhesions and the thin sclerosed and often calcareous vessels in the pedicle of the spleen, particularly in the advanced stages of the disease. The capsule of the organ is easily torn, and the pulp is soft and friable. Careful manipulation is therefore necessary. The operative mortality at first in the early days of splenectomy was as high as thirty-eight per cent., but in recent years the figure has been reduced to about eight per cent. or less. This satisfactory reduction in operative mortality is not only due to the perfection of the technic, but to proper preoperative treatment. In some instances x ray and radium treatment has been used to reduce the size of the enormously enlarged spleen, but in most instances preoperative blood transfusion has been the main contributing factor to the safety of the operation. In the Lankenau Clinic preoperative blood transfusion is resorted to in all cases

where the hemoglobin is below forty per cent., and is done about forty-eight hours before operation. Of course, the cardiovascular and renal functions are studied as a routine measure.

The approach to the spleen will depend upon the presenting conditions. Unless the spleen is enormously enlarged, the pedicle may be reached from the front, after the stomach has been drawn well to the right and the gastrosplenic omentum has been divided. The vessels in the pedicle are usually most conveniently reached by turning the spleen over, after releasing adhesions and dividing the splenophrenic fold of peritoneum. These adhesions, however, are often dense and may contain large veins which will have to be divided between large clamps, and the spleen gradually mobilized; venous oozing being controlled by hot gauze packs in the splenic bed. The hand is then introduced between the spleen and the diaphragm, and the spleen is drawn into the wound and turned over, the vessels in the pedicle are secured between clamps and cut as close as possible to the spleen. At this stage of the operation great care must be taken to avoid injuring the pancreas. Enough of the tissue of the pedicle must be left to allow the vessels to be ligated. The ligatures are applied separately to each of the vessels as they are identified. As soon as the bleeding from the pedicle has been controlled, the packs are removed, and after checking any bleeding in the subphrenic space the abdominal incision can be closed. If the operation is done for hemolytic icterus, it cannot be considered complete without careful exploration of the biliary passages. As we have already indicated, gallstones are present in about sixty per cent. of cases of hemolytic icterus, so that a splenectomy cannot be considered complete without exploration of the bile passages, and if the patient's condition permits, removal of the gallbladder, if such is indicated. Prophylactic appendectomy should also be done.

Postoperative transfusion of blood is often necessary. The greatest dangers after the operation, aside from shock and collapse due to the severe hemorrhage, are bronchitis and pneumonia, which with painstaking care are avoidable in most instances, particularly if the operation is done under gas and oxygen. One of the late complications to be feared is intestinal obstruction due to adhesions of the jejunum to the splenic stump or to a raw surface in the subsplenic space.

The remote results of splenectomy are, on the whole, excellent. In most cases a clinical cure is established, although examination of the blood oftentimes shows a permanent increased fragility of the red cells. Pernicious anemia is not always considered amenable to surgery, but in a certain type of cases the operation undoubtedly prolongs life and is followed by longer remissions of the disease.

SPLENECTOMY IN PURPURA HEMORRHAGICA

In recent years splenectomy has proved of distinct value in the treatment of purpura hemorrhagica. This is one of those diseases with which we are familiar but about which we know very little. It is only with the aid of modern methods of blood examination that a differentiation of the several types of the disease has been made possible. The type which seems to be amenable to splenectomy is the one known as essential thrombocytopenic purpura hemorrhagica. To Brill and Rosenthal of the Mount Sinai Hospital, New York, belongs the credit, in this country, of differentiating and naming this disease. As the term indicates, it is marked by a decrease or absence of thrombocytes or blood platelets in the blood.

It was Frank, of Berlin, Germany, who, in 1916, first offered the theory that the spleen inhibited the formation of blood platelets. Following this Kaznelson (in the same year) asserted that the spleen brought about the actual destruction of the blood platelets in this disease. Acting on this theory he proceeded to remove it with gratifying results. Since then the operation has been reported from many centres with equally good results.

It is well to bear in mind, in this connection, that up to the present time this thrombocytopenic type is the only type of purpura hemorrhagica for which splenectomy is indicated. It is essential, therefore, that the diagnosis is correct before venturing on surgical treatment for this form of hemorrhagic disease. A careful count of the platelets by one of the newer methods should distinguish this condition.

1634 Walnut Street.

The Permanency of Hay Fever Cures

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The modern treatment of hay fever, as practised by the use of pollen extracts to desensitize patients from the pollens responsible for their attacks, is considered by most immunologists as being only of seasonal benefit.

In the clinics of the department of hay fever and asthma of the Charity Hospital of New Orleans, in which the attendance is over one hundred during the hay fever season, the permanency of cure of the cases treated is the most indefinite of all the statistics (1). This is due to the fact that these patients attend the clinics as long as they suffer from hay fever, but discontinue when this is not the case. Whether, however, such a discontinuance is due to inability to attend, or to a permanent cure, it is impracticable to determine.

In private practice, however, in which there is a more personal relation with the patients, information of the permanency of the benefit obtained by this treatment is not so difficult to obtain. A number of these cases will therefore be selected from this list, in order to illustrate that in a certain number of cases, at least, the treatment of hay fever is followed by a permanent cure.

Cases of cure lasting more than one season are not infrequently met with in the clinics. It is not unusual, for instance, to have patients report that they had received treatment before, and did not have hay fever the following year, and therefore did not report for further treatment. The present report is limited to cases in which the freedom from hay fever symptoms continued for at least three or more years.

Case I.—The first on this list is a cotton planter, forty-six years of age, referred by Dr. William Brickel, who had suffered for twelve years from a violent form of fall hay fever, and who was treated in 1913. During the months of September and October he was practically unable to visit his plantations, and when circumstances made this necessary he suffered from such violent paroxysms that he was incapacitated for days afterwards. He gave a marked reaction to the common ragweed, and was given a coseasonal treatment of pollen extracts in 1913, and complete preseasonal treatment in 1914 and 1915. The first treatment was of benefit, and the second and third apparently gave complete relief.

I did not see this patient until three years afterwards, when he reported that he had continued to have relief, and was able to visit his plantation without discomfort. Since then I have had reports from him from time to time, each confirming the record of a permanent cure.

Case II.—The next case is that of the manager of a manufacturing plant in New Orleans, who was referred by Dr. Peter Salatich on April 2, 1917. The patient was fifty-one years of age, and had suffered for thirty-eight years from hay fever, which developed during the months of April and May, and August, September and October. During the last two years the fall attacks had been followed by asthma. He gave a sixty per cent. reaction to the grasses, and seventy and seventy-five per cent. to the common and giant ragweeds, respectively. He was given a course of treatment in 1919 and 1920, including desensitization first to the grasses, and then to the ragweeds, the treatment being repeated in 1920. Since that time the patient, whom I have occasion to see at intervals, has had no further attack of either hay fever or asthma. On August 15, 1924, he reported to the office, fearing that he had a recurrence of his hay fever, but this proved to be only a coryza, which disappeared in a few days.

The ten year old son of this patient had bronchial asthma in 1920, which was found to be due to pollen sensitization. The treatment of this case was also followed by a permanent cure.

Case III.—Permanent results were obtained in the case of a stenographer thirty-two years of age, who had suffered for three years from perennial hay fever. She was found sensitive to the grass, chenopod, and ragweed groups. She was also sensitive to face powders, feathers, and wool. The elimination of these resulted in improvement, but the relief was not complete until she was desensitized to the three pollen groups. The patient has had no recurrence since 1918.

Case IV.—The wife of a well known physician applied for treatment on June 20, 1918, having suffered from hay fever for two years, the period being May 15th to November 1st. She had sixty-five per cent. sensitivity to the grass group, and seventy per cent. to the ragweed group. She was given a coseasonal treatment for the spring hay fever and preseasonal for the fall hay fever. This resulted in complete relief, which has been maintained since 1918.

Case V.—A prominent druggist of Mississippi applied for treatment October 1, 1921, being referred by Dr. T. R. Beech, of Ellisville, Mississippi. He suffered from hay fever in the spring and fall, but attacks could also be excited at any season by the inhalation of the dust of flaxseed, when handling this in the course of his business. He was twenty-six years of age, and had suffered for five years. He presented a reaction of fifty per cent. to the grasses, and thirty-five per cent. to the ragweed group. A course of desensitization was outlined, which was carried out by Dr. Beech. This was followed by complete relief, the patient having had no recurrence of his hay fever.

Case VI.—A patient forty-three years of age, suffering from hay fever for two years, was referred to me by Dr. J. H. Slaughter, of Bogalusa, Louisiana, on July 15, 1920. The attacks lasted from April to October, and the patient showed a sensitivity to the grasses of forty per cent., and to the ragweed of sixty per cent. The patient was given a desensitization treatment in 1921, resulting in total relief. The patient reported in June, 1925, that there had been no recurrence of her hay fever.

Case VII.—The next patient had suffered from the socalled rose fever for ten years, and was of such a nervous type that it was difficult to make the necessary cutaneous tests. She was forty-nine years of age, and a native of New Orleans. She was found sensitive to the grass and chenopod pollens, but negative to the ragweeds, which coincide with her attacks of hay fever, which commenced in June and ended about September 1st, when the ragweed pollen begins to become active in New Orleans. Her rule had been to leave New Orleans as soon as her hay fever developed in June for some locality in which she did not suffer, and to return in September when her hay fever season was over.

She was given the desensitizing treatment for the grass and chenopod pollens in 1922. This relieved her almost entirely, and for the first time in ten years she was able to remain in New Orleans without discomfort. In the spring of the following year the cutaneous tests were almost negative, but she was given four extra treatments as a precautionary measure. She has been entirely free of hay fever since that date, in spite of the fact that she remains in New Orleans during her former hay fever season.

Case VIII.—The next patient is a dentist of New Roads, Louisiana, aged thirty-eight, who had suffered for five years from combined spring and fall hay fever. He was referred for treatment June 15, 1920, by Dr. M. O. Becnel. He gave a reaction of forty-five per cent. for the grasses, and seventy per cent. for the ragweeds. The desensitizing treatment was commenced on June 15th, being carried out according to our instructions by his family physician, and on August 9th treatment with the ragweed extract was commenced. The result of this treatment was a great improvement in his condition. In 1921 it was found unnecessary to give the spring desen-

sitizing treatment. The fall treatment, however, was given but was not started until August 15th, so that the patient had one attack of hay fever. The following year the tests gave practically a negative reaction, and it was not found necessary to continue the treatment. In 1925 he reported that he had had no further attacks of hay fever.

These cases are cited to show that the benefit from the desensitizing treatment of hay fever is permanent in a certain number of cases. These cases have been selected to illustrate that this effect may be obtained in cases of long standing (thirty-eight years), in the spring form, the fall form, the combined spring and fall, and in the perennial form of hay fever. These cases are not yet sufficient in number to form any conclusions as to the underlying conditions of a permanent cure, but they undoubtedly form a basis for a further analysis for this purpose.

These cases have been carefully selected so as to avoid other causes than the effects of the treatment in the result. It is well known, for instance, that patients changing their residence are sometimes relieved of their hay fever (2), this being due to the fact that the pollens to which they are sensitive are not found in the new locality, or at least not in sufficient numbers to produce their hay fever reactions. Such cases have been carefully eliminated from this report.

CONCLUSIONS

The desensitizing treatment of hay fever is followed in a certain percentage of cases by permanent cure, and such cases should be carefully analyzed with a view of making such successful results more common.

It is quite possible that patients are given the preventive treatment of hay fever, who are already sufficiently desensitized. Patients should, therefore, be carefully tested before the opening of their hay fever season, not only with a view to outlining the preseasonal treatment, if required, but also, in the case of a negative reaction, to avoid inflicting an unnecessary treatment on the patient.

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Audubon Building.

Eyestrain

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In this age of overuse of the eyes the condition of eyestrain is very frequent. Beginning with the infant too much use of the eyes is encouraged. There is too much pushing of the baby in a carriage along the streets, with the excitement of the whizzing by of automobiles, to say nothing of the street dust and the carbon monoxide pollution of the air that the child must breathe. Also the young child is too frequently taken automobile riding, with the rapid changes of scenery and the swish of the passing machines.

A little older and the child reaches school where the eyes are the principal portals for knowledge to enter his brain, as evidenced by the whole side, or two sides, of the schoolroom being devoted to windows for extra light. Soon moving pictures are added to his eye work, and a little later increased hours of daylight activity and strong electric lights. Then come parties, automobiling after dark, and more use of the eyes. Next comes higher education of some kind, which must be acquired by use of the eyes; and finally the life work, with the eyes the most important element in the success of such work. Often this work must be done in poorly lighted rooms or in electric overlighted and ill ventilated rooms. Long before this period, frequently as a child, glasses have been acquired for recognized eye defects.

The most frequent cause of eyetire and eyestrain is astigmatism. A person who is given glasses is not sufficiently, often not at all, instructed that, with this eye defect, the glasses must be perfectly adjusted. Consequently, because the lenses become mal adjusted very frequently, no matter what the type of frame, he again suffers eyestrain and therefore decides that "it is not his eyes that are at fault," but that the eyetire or headache or other symptoms are due to his general condition, and a round of other treatment is begun. Also he is not told, or not impressed, by the oculist that his eyes will mold to another degree of astigmatism, and that a reexamination of the eyes and a refitting of glasses will be needed.

Many times the person thinks that anyone with an optician's sign can fit his eyes to glasses, and he suffers according to the amount of the misfit. No blame should apply to the careful oculist who misjudges the correction needed, and the patient should be made to understand, which he does not, that the oculist's science is no more exact than any other branch of medicine. The patient should revisit his oculist until the right glasses are acquired. Also the oculist must insist on the patient returning to him to insure that the glasses are correctly ground and the frames are correctly fitted. Misfitting frames are frequently the cause of what the patient calls "the oculist's failure."

Now, what are the symptoms of eyestrain? Most frequently pain or ache in some part of the head, often accompanied by nausea and loss of appetite, sometimes by vomiting, not infrequently by complete inability to work for some hours. In these cases the diagnosis is easy.

These headache attacks often occur periodically, apparently representing the limit of tire that the eyes can stand. The headaches are brought about by extra hours of work or play, overreading, moving

pictures, theatres, lectures, shopping, moving crowds, watching the waves or viewing mountain scenery, motoring, trolley or train riding, overeating and drinking, constipation, or by any other disturbed bodily function. The headache sufferer gives up one pleasure after another until he or she finally becomes more or less of a misanthrope and is even disgusted with life itself. These eyestrain persons, who all have more or less indigestion, are likely to attribute the disturbance to some food, and will avoid first one article of food and then another without benefit. They commonly believe the trouble is due to constipation and take all kinds of purgatives, and by the sequence of events, *post hoc,* the headache and indigestion cease for that time.

The most misunderstood and neglected cases of eyestrain are those with but little or no headache. These patients may have all kinds of reflex indigestion, or have reflex heart symptoms, or insomnia, lose weight, and are supposed to have a socalled nervous breakdown. This ailing but not seriously sick person very frequently takes nostrums of all kinds. Depending upon his special symptoms he may seek a stomach specialist, a nerve specialist, a heart specialist, or, more frequently, he goes to a pseudopractitioner of some ilk.

If he visits a general practitioner, he will all too often, in this busy age, receive only a cursory examination without much time being devoted to questioning. Questions and answers will develop symptoms and causes of symptoms that the most careful physical examination cannot. Consequently the cause of his trouble is not eradicated and he receives no benefit. If the physician is more thorough, the patient is given a prolonged physical examination with all kinds of tests except an examination of the eyes, which is the test most frequently omitted. He is found to be "neurasthenic" or "neurotic," and a prolonged rest cure, often with sedative drugs, is prescribed.

If he goes to a specialist, he is treated, very frequently, for disturbance of the part of the body in which the physician has specialized without much investigation as to whether or not the symptoms are reflex, and again the patient is not benefited. He continues to spend money and finally becomes despondent, all because the verbal examination was incomplete and an examination of his eyes was not made.

Sometimes these patients suffer for many years before someone (often the patient himself) decides there is an eye defect. He then visits an oculist, obtains glasses that are right, and is cured. Or many times after obtaining glasses on his own initiative, or by the order of his physician, carelessness in the eye refraction or poorly adjusted frames allows of no great improvement; or he may become worse. The eyes are then considered not to be at fault, and he again seeks treatment or gives up his occupation and takes a prolonged rest. Many a youth has lost his whole career by being compelled to give up his studies on account of an undiagnosed eyestrain.

The object of this discussion is to urge that the almost forgotten art of carefully obtaining the personal history of a patient be redeveloped, and that with the very common condition of eyestrain the physician's duty does not end at the oculist's office. The physician in charge of the patient must insist that he know the glasses are right, that the frames are properly adjusted, and that the patient is benefited. Then his duty is to caution that glasses out of adjustment will again cause the same symptoms, or some modified form of the previous symptoms, to develop.

I suggest the following questions for developing the relation of the eyes to the disability:

1. At what age did the headaches first occur?
2. What is the frequency of the attacks of headache, and what is the exact work or play after which they occur?
3. What is the time of day at which the headache develops, especially the relation of the headache to arising in the morning, or to the work or pleasure of the evening before?
4. What is the relation of the headache to close eye work? What is the relation of the headache to an evening at the theatre, or at the movies?
5. Whether or not the person has a growing dislike for reading, sewing, playing cards, shopping, crowds, parades, ball games, trolley riding, train riding, automobiling, theatres and moving pictures.
6. Whether there is a history of car sickness.
7. What are the associated symptoms of the headache, as anorexia (or often the reverse, several hours before the headache a craving for food), or nausea or vomiting?
8. How soon after vomiting does the headache cease, and is the patient soon able to eat a good meal? Such an immediate appetite is of frequent occurrence, and completely rules out acute indigestion or an acute stomach disturbance. The reflex indigestion that is caused by the eyestrain may allow food to remain in the stomach and be vomited hours, even twelve or more, after it has been ingested.
9. Whether or not there are any heart symptoms with the headache? Some eyestrain patients have waves of nausea and sensations of fainting. They often have palpitation, and have, or imagine they have, heart pains.
10. Whether or not there is insomnia? Many patients cannot sleep, lose appetite and weight, and are supposed to suffer from socalled nervous exhaustion, with headaches and insomnia as important symptoms.
11. Whether or not there is history of dizziness? Some patients with eyestrain have queer spells, become dizzy and faint, sway on the street, and walk sidewise. I have had several such cases cured by correct glasses after long previous unsuccessful treatments of all kinds.
12. Bifocal lenses may be entirely inappropriate for the individual, especially when he is out and about. Many a patient cannot drive a car while he is wearing bifocal lenses, or cannot use them for his daily work. Also not infrequently the magnifying lenses of the bifocals are misplaced; they are too high or too low, or too strong for middistance work. The reading lens is frequently utterly inappropriate for the work the person has to do. Two strengths of bifocals must frequently be given if the person is to be comfortable and symptomless. One bifocal should be of the proper strength for reading, and the other, a weaker bifocal, for all ordinary middistance use of the eyes.

Were it worth while illustrative cases could be described, but it is hardly necessary, as every careful practitioner of medicine sees patients with more or less chronic invalidism from headaches. Many a patient will relate the history of periodical headaches all his life until after forty years of age, when they become less and less frequent. This diminished frequency of the headache, or often its entire abeyance, is due to the developing presbyopic stiffening of the lenses, and therefore there is less and less muscle effort to produce an unblurred image. Also, soon presbyopic glasses are required, and at an examination for such the long undiagnosed optic defect is found and corrected. Women think the cessation of recurring headaches at this period of life is due to the menopause. The cause is advancing age, which fact must of course be diplomatically presented to the patient.

Benign Tumors of the Anus and Rectum

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At the anus and within the pelvic portion of the colon there develops a variety of growths benign and malignant between which the distinction is not always clear. There are many borderline cases and certain tumors which, though not themselves destroying life, may cause much misery through constipation, intestinal obstruction or intussusception, besides ulceration and hemorrhage, and may in time undergo malignant transformation. Of forty-two such cases collected by Quenu and Landel twenty of them ended as true cylindrical carcinoma. These rectal tumors are of different anatomical structure, but each resembles the tissues from which it springs. All rectal tumors incline toward the direction of least resistance, and therefore protrude into the lumen of the bowel. Once the mass extends into the intestinal canal it is dragged upon by the passing fecal current and by the straining incident to defecation until its attachment is drawn out into a slender cord or pedicle and a polyp (or polypus) is formed.

Histologically we find that in benign tumors the cellular elements are fully developed and normally arranged, whereas in malignant tumors the cellular elements are irregularly arranged, are imperfectly developed, and are found growing outside of their normal sites. Further than this we do not know what inherent qualities or characteristics render one neoplasm benign and another malignant. Tumors of the connective tissues are the fibroma, enchondroma, lymph adenoma, lipoma and myxoma. In the muscular structures are the myoma and fibroma which are very benign. In the epithelial structures are the adenoma and papilloma. Irregular growths are also found such as cystomas, fungi, vegetations and excrescences.

Papillomata are cauliflower like, branched and lobulated growths of the epithelium which originate through the baring of the papillary bodies by slight injuries and develop in the presence of the favoring elements heat, moisture and chronic infection. While the influences that give rise to a true papillomata or wart and to a polypus are essentially the same, there is a marked difference in their clinical appearance.

Papillomata occurring on the skin are rough and hard, while those arising from the mucous membrane are very soft and velvety with loose edematous stroma. In both localities, because of constant traumatism, they are frequently inflamed or ulcerated. Because of this difference in clinical appearance papillomata will here be considered under two captions: 1. Those occurring on the skin about the anal or rectal canal. 2. Those occurring within the anal or rectal canal.

PAPILLOMA ABOUT THE ANAL REGION

Perianal warts, papilloma, vegetations, condyloma or verruca, as they are variously called, are perhaps the most commonly met of all anorectal disorders. They are not particularly serious in themselves, but they are sufficiently obstinate things to treat; and it must be borne in mind that warts, especially in the aged, are always potential foci of malignancy. These growths consist of hypertrophy of the papillary layer of the skin and are composed of connective tissue and bloodvessels, together with a covering of epithelial tissue; they are bright red in color, fragile and liable to bleed freely. Little warty tumors develop, which rapidly branch and intermingle with the branches of other warts until they form what seems to be one large tumor, but which, when removed, is seen to be attached to the skin by numerous pedicles (Fig. 1). The moisture and secretions collect between these ramifications and, as a result of maceration and decomposition, these growths throw off a strongly fetid odor. By contact, all of the surrounding tissue becomes inflamed. According to the exuberance of the growth, various fanciful shapes are assumed, these being described as cockscomb, cauliflower and such like. When the connective tissue is abundant and the epithelial covering is thin, the growth is dry and hard (Fig. 2); but when the dermis is thick and the growth is soft, it is moist. The moisture and warmth of the parts favor the development, although an idiosyncrasy exists in stout individuals.

Formerly these growths were considered proof positive of syphilis and sodomy, but, although they may be associated with syphilitic lesions about these parts, they are not necessarily a sign of lues. The discharge of gonorrhea, leucorrhea, hemorrhoids, proctitis or any other lesions may be the cause. The condition itself is not contagious and is not responsive to antisyphilitic treatment.

The vegetations usually develop during early adult life, but are sometimes seen in infants and the aged. Their development in some persons is rapid and slow in others. In advanced life it is thought they result from degenerative changes in the skin. The growths

may consist of a single papilla or it may involve the whole intergluteal area. It may be situated at the anal margin or outward, on the buttock. Often the primary growth begins on one buttock and later affects the opposite cheek. Any kind of irritation would produce the same effect. The symptoms, therefore, vary with the extent of the growths, their locations, and the amount of the secretion.

When the growth is large the patient is aware of a foreign body being present between the nates, and he is annoyed by the foul discharge as well as the fresh abrasions constantly occurring. When the anal margin is involved, defecation causes considerable pain, which may resemble the pain of fissure; there also may ooze out a few drops of blood. Although as a rule these growths develop on the outside skin, they may originate within the rectum.

The differential diagnosis is not difficult, except that it may be mistaken for a mucous patch; its attachment, like that of a shrub, being sufficient to distinguish it. Syphilides have a diffuse infiltrating base and form a broad, flat mass free from any tendency to pedunculation. Malignant growths are deep seated on an indurated base and tend to invade the deeper structures.

Treatment.—Scrupulous cleanliness and the application twice each day of an astringent dusting powder are sometimes all that is needed. In most cases, however, the growths should be clipped off with scissors and hot compresses applied to control the bleeding. If the growth recurs the whole surface should be sprayed with fulguration.

PAPILLOMA OR VILLOUS TUMOR ARISING WITHIN THE RECTUM

These tumors resemble the adenoma closely in histological structure and in the pathological course, but differ from that class of growths by being lobulated like a cauliflower with some of the masses ending in a fine lacelike edge (Fig. 3). The whole growth is spongy on manipulation. This tumor arises from the surface of the mucous membrane of the bowel and is attached by a broad base through a short pedicle never more than two inches long. The growth is flat (plaquelike) and spreads over a wide area, and consists of a number of lobes. These lobes, although they are approximated to each other, are not united, but each has its own pedicle. The pedicles are then attached to each other and into a common base. Each lobe ends in a number of villi or papillæ. The whole tumor may attain a large size, red in color and soft and velvety to the touch. Moffat (1) reported one as large as a human head.

Symptoms.—Early in the history of these growths the sufferer notices a free discharge of thick, tenacious, viscid mucus which much resembles the white of an egg. Rectal tenesmus with a frequent and urgent desire to empty the bowel causes the mucus to be involuntarily discharged thus soiling the clothing and staining the garments a light yellow. This mucous discharge has much the same effect that we might expect from a purulent excretion, the patient is debilitated, pallid and loses weight. There is also some loss of blood, but this symptom varies considerably in different individuals. The hemorrhage may occur only occasionally, there may be daily oozing or streaking of the stools, or it may drip after each bowel movement, or a profuse hemorrhage may occur, which exsanguinates the patient and leaves him in syncope. All of this pathological condition causes little pain.

On digital examination the tumors are soft, velvety or mushy and covered with mucus. The examining finger can be worked in between the lobes of the tumor. The attachment is by a broad, flat base, but there is no induration of the surrounding structures, and it is therefore easily distinguished from the malignant cell epithelioma, and so called vegetating epithelioma.

Diagnosis.—Papilloma is to be especially differentiated from adenoma and vegetating carcinoma, which it closely resembles.

The single adenoma is found almost entirely in children, while the papilloma is found in adults and usually in elderly persons. The multiple adenoma with a broad based attachment occurring in adults presents the uncontrollable diarrhea and mucopurulent evacuations instead of the clear, gluey mucous discharge.

Vegetating carcinoma is friable and has a dense induration about its point of attachment.

Case.—H., aged nineteen years. Patient noticed a slight pain on defecation about three months previously and on examination discovered a large protrusion at the anus. This mass had grown larger and more painful until at examination when sitting on a chair it was tender. She had noticed free blood streaking the stools during the past month. Patient was well developed and well nourished. Local examination revealed a mass about the size of an egg on the anterior edge of the anus growing from a small pedicle. It was covered with small papillæ. Nothing was felt on internal digital examination of the rectum. Fig. 4 shows appearance of tumor. A diagnosis of papilloma of the anus was made.

The tumor was excised at its base and the mucosa closed with fine catgut sutures. Recovery was complete in one week.

ADENOMA

Adenoma is the most frequently found benign growth in the bowel and furthermore it is found in the rectum more often than in any other part of the intestine. Adenomas develop from the mucous and submucous coats of the bowel and contain all of the elements found in these layers. Adenomas undergo early degenerative changes and frequently after they have been removed, there recurs at the site a return of the same kind of a growth or a malignant neoplasm.

The majority of rectal polypi belong to this class and rectal adenomas are so often referred to as polypi that many practitioners consider the terms synonymous. Such, however, is not the case. All polypi are not adenomas, neither are all adenomas polypi. Adenomas undergo hyaline, myxomatous or cystic degeneration but do not develop metastasis. They are found in all ages although those occurring in children differ very much macroscopically, microscopically and clinically from those present in adults. Two different types of adenomas exist, the single adenoma with the long pedicle usually found in children, and multiple adenomas, having broad attachments and usually found in adults.

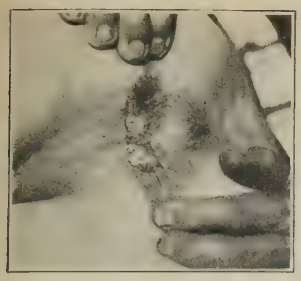

FIG. 1.—Perianal warts. Note the lobulated character of the mass as the buttocks are spread apart.

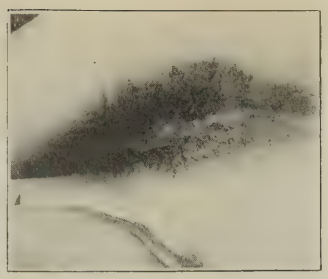

FIG. 2.—Flat dry papilloma at the anus.

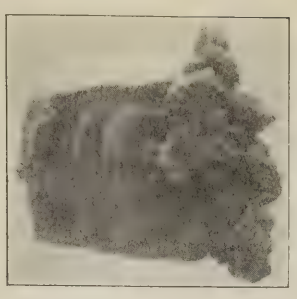

FIG. 3.—Papilloma of the rectum. Specimen in the Pathological Museum of the Northwestern University Medical School.

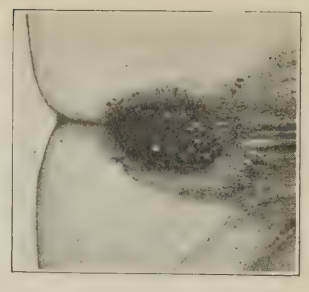

FIG. 4.—Papilloma of the rectum (pedunculated) protruding from the anus.

SINGLE ADENOMA

In children there is usually a single adenoma or at most but three or four, varying in size from that of a cherry to perhaps a hen's egg, each with a slender pedicle which may measure up to six inches in length, depending upon the size and age of the tumor. If the mass has been dragged upon for a long time by the bowel trying to expel it, the pedicle becomes stretched and attenuated. The tumor itself

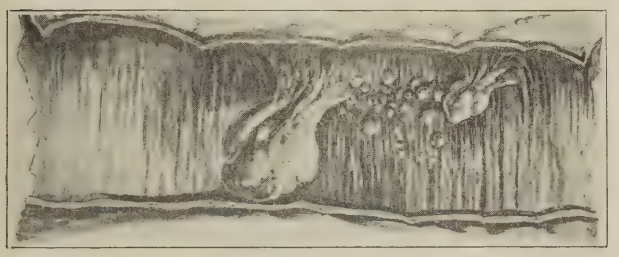

FIG. 6.—Diagrammatic drawing of a case of multiple adenoma within the sigmoid and rectum.

much resembles a red raspberry in appearance. It is ovalshaped, bright red, with a rough surface and consists of a preponderance of connective tissue with a small amount of glandular and epithelial structure. This type of adenoma usually occurs in children under twelve years of age although it is sometimes found in adults (Fig. 5).

The single polypoid shaped tumor occurring in children may be extruded only during acute digestive disturbances accompanied with powerful peristalsis

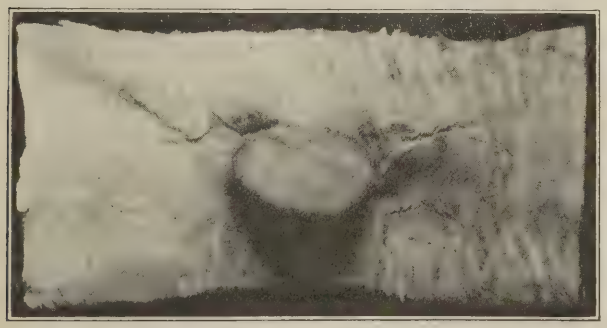

FIG. 5.—Single adenoma of the rectum. Specimen in the pathological Museum of the Northwestern University Medical School.

and tenesmus. At other times when retained within the bowel it may cause obscure digestive disturbance with diarrhea. On examination with the proctoscope the adenoma will often drop into the lumen of the instrument and may be easily removed with a snare rather than clipped off with scissors as by the slow crushing of the snare the intima of the vessels is crushed and there is less danger of hemorrhage resulting. The small stump of the pedicle soon atrophies completely and will therefore need no further attention.

MULTIPLE ADENOMAS

This condition is ordinarily a disease of young

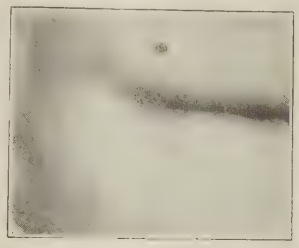

FIG. 8.—External exit of a congenital sinus at the tip of the coccyx.

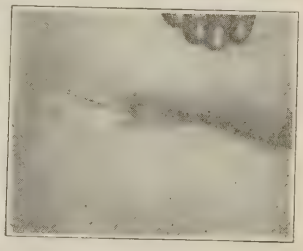

FIG. 9.—Probe passed through the congenital sinus comes out nearer to the anus.

adult life (Quenu and Landel (2) report over fifty per cent. occurring between the ages of twenty and thirty-five years) but it sometimes occurs in children. In the latter two, three or even four separate adenomas may be found with slender pedicles but such a condition is exceptional of the single adenomas. The clinical course of the single adenoma with the long slender pedicle is entirely different from that of the multiple adenoma with the short thick base and moreover the single adenoma of childhood never develops into the multiple adenomas of adult life. The cause of these tumors is not known, although very interesting theories have been advanced. For example, Huber (4) of New York has attempted to show that these tumors are a result of a general systemic lymphatic hypertrophy. The sigmoid and rectum are most frequently affected, although when the tumors are spread over a wide area the whole colon may be affected. There may be several tumors clustered together in one patch of the bowel

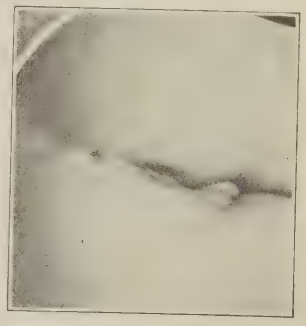

FIG. 7.—Congenital depression or pit at the tip of the coccyx.

and a second collection farther up with an intervening portion of healthy mucous membrane between them that is involved. The sites most frequently affected are those at which the feces are accustomed to be arrested, and because of this fact it is thought that local irritation and infection by the feces is an exciting cause. Fink (4) believes that they begin in the rectum and gradually multiply upward.

With the proctoscope the tumors may be seen, their number, general characteristics and the extent of the bowel involved noted. One of the growths may be excised and examined microscopically but a negative report of one tumor does not determine the character of the others. Three out of four cases of multiple adenomas become malignant sooner or later. Microscopically these tumors are composed of hypertrophied glands and connective tissue covered with cylindrical epithelium.

There is a great variation in the gross appearance of these. In a case seen by the author, an illustration of which is here shown (Fig. 6) a number of tumors were found. The largest one was about the size of a hen's egg, the upper one was as large as a good sized strawberry, and the small ones between these two were the size of green peas. There were also a number of masses which were palpable in the mucous membrane but do not show in the picture. In this case the surface of tumors was smooth but irregular like the surface of a potato. Other observers have reported cases in which the surface of the growth was like a mulberry. Such masses closely resemble villous tumors. The consistency of the adenomas varies much with the proportions in which the connective tissues and the epithelial structures are found. Tuttle (5) believes that the harder the tumor the more likely it is to undergo carcinomatous transformation. The pedicle is composed of mucous membrane, areolar and fibrous tissue and bloodvessels and is usually short and thick; never so long as is that of the single adenoma.

Symptoms.—There are four prominent symptoms in all cases of multiple adenoma, namely, diarrhea, hemorrhage, pain and exhaustion.

The diarrhea which resists all astringent remedies to control is accounted for in part by an associated proctitis or colitis which always is present. The stools are small and contain mucus and also fresh and old blood. If there is much decomposed blood the evacuations are black and disgustingly foul. Occasionally an evacuation may consist wholly of mucus or blood. The pain differs in degrees but is somewhat diagnostic of the location and size of the tumor. Adenoma in the colon, sigmoid or upper part of the rectum occasion tenemus and colic, but those in the ampulla or lower rectum may not cause the pain unless they are so large as to cause obstruction. If that occurs the pain is severe. Prolapse of the rectum may be caused by these growths.

Extrarectal dermoids occur in the tissue of the rectovaginal septum or of the retrorectal space, and also just beneath the skin between the anus and sacrum. Sometimes one breaks through the rectal wall and develops as a pedunculated tumor, the pedicle being attached to the tissues in one of these spaces. These dermoids are similar to those which occur elsewhere in the body. They should be dissected out.

LIPOMA

A lipoma is a tumor composed of adipose tissue. When found in the rectum it develops in the submucous layer. It may form a part of the rectal wall or it may be pedunculated. Because of its origin below the mucosa, if the lipoma is removed its base should be ligated because of the possibility of invagination of the peritoneum into the intestine. Where the tumor forms a part of the rectal wall it should be enucleated through an elliptical incision and the wound sutured.

FIBROMA

Fibroma in the anus and rectum is rare. It originates in the connective tissue of the submucosa and may attain considerable size. It may remain in the rectal wall or it may become a polypus. The socalled fibrous polypus is a fibroma but containing also muscular and glandular tissues. It usually continues through its existence a fibroma but may degenerate into a sarcoma.

Enchondroma is a still rarer form of connective tissue tumor, and is composed of cartilagenous and fibrous tissues. Only a few rectal enchondromas have been reported.

Diagnosis.—Whenever a diarrhea persists longer than a few days a local examination of the rectum and sigmoid should be made, when adenoid if present will be felt and seen. The subjective symptoms tenesmus, colic, diarrhea and hemorrhage indicate somewhat the degree of inflammation and obstruction caused by tumors. Sometimes these growths can be felt in the colon by abdominal palpation. Polypi which have undergone carcinomatous change have a peculiar indurated base, produce a foul discharge due to the breaking down of the tissues, and the ulcerated portion may be seen through the proctoscope. On digital examination several tumors may be felt. These may vary greatly in size, some being as small as a pea and others may perhaps obstruct the lumen of the bowel. Some may have pedicles and others not. The small tumors are soft but the larger ones are firm as a result of inflammatory or carcinomatous change.

A piece of the tumor may be removed and examined by frozen section but the site from which the fragment was removed must be immediately sterilized with the cautery to close the bloodvessels and lymphatics and lessen the danger of invasion by cancer if malignancy exist. Where several tumors exist some may be benign while others are cancerous.

Treatment.—The medicinal treatment of the polypi within the large bowel is very unsatisfactory. Diet has no effect on the diarrhea or discharge, and astringent drugs except huge doses of opium are utterly unable to control the symptoms more than temporarily. Surgery offers the only permanent relief.

The growth must be promptly, carefully and thoroughly removed. Following any less radical treatment they invariably recur. Operation should be performed at the earliest possibility because the tumor increases in size until it may obstruct the canal, also the mucus discharge exhausts the sufferer, and there is always the possibility of malignant transformation. The method of approach will depend on the situation of the growth.

Tumors in the rectal ampulla become pedunculated and are dragged down until they extrude from the anus at each defecation. Such tumors can be removed through the proctoscope with a snare. Sometimes these tumors are sessile instead of pedunculated and must be excised. An elliptical incision should be made through the mucous membrane down to the deeper coats and the edges closed with fine catgut sutures. By so treating the base there is no danger of cutting through an invagination of the peritoneum, should that be present, as might occur when using a snare or a crushing instrument. The wound edges must be carefully approximated with fine catgut to assist prompt repair as otherwise an ulcer may result, and in these epithelioma frequently develops.

Aftertreatment.—The rectum should be cleansed at least twice daily during recovery and the field may be kept scrupulously dry and clean. The patient should be given ten minims of tincture of opium three times each day to confine the bowels. On the fifth day he is given an injection of eight ounces of mineral oil to facilitate defecation and following each evacuation for the next week the lower bowel should be irrigated with normal salt solution. Because of the possibility of malignant recurrences these patients should be kept under observation for at least one year.

Tumors in the sigmoid are difficult to remove through the sigmoidoscope and in such procedure there is always danger of producing perforation of the bowel with resulting septic peritonitis and death. Such neoplasms should be removed by sigmoidotomy, as advised by Mayo (6).

Technic.—The abdomen is opened in the median line suprapubically and a selfretaining speculum adjusted. The patient is placed in the Trendelenburg position, the small bowels packed off and the sigmoid lifted up and opened through the anterior white band at a point opposite the tumor. The neoplasm is exposed and delivered through the incision until sufficient normal mucous membrane is everted to apply double clamps well beneath the base of the tumor. The growth is cut off with the cautery and the mucous membrane wound closed by continuous suture of chromic catgut. The bowel below the site of the growth should be reinforced by a few interrupted silk sutures. The incision in the sigmoid is then closed with continuous catgut and interrupted silk. A long rectal tube is introduced at the anus, passed beyond the operative site, fastened to the anus with a suture and left *in situ* for a few days to prevent the accumulation of flatus.

When the tumors extend above the sigmoid they are not usually localized, but may be found in any part of the colon. In some instances the growths seem to develop as a result of infection and a cure may be effected by complete physiological rest of the entire large bowel for a period of six to twelve months. An ileostomy with a right sided artificial anus should be tried before resorting to colostomy. In the intervening months while the ileostomy is being tried, the rectum and lower sigmoid may be cleared of polypi. Later the bowel may be restored to its function if deemed advisable. Appendicostomy and cecostomy do not serve this purpose because although both permit colonic irrigation and medication, the colon is promptly refilled with and contaminated by fecal contents from the small bowel. Short circuiting by ileosigmoidostomy does not relieve the infection in the pelvic colon. It is often impossible to bring the ileum down to the lowest loop of the sigmoid and, therefore, the disease below the anastomosis will persist. Ileostomy has all of the advantages of a left sided colotomy without its disadvantages. Ileostomy permits drainage of the small bowel and physiological rest with irrigation of the colon. The contents of the small bowels possesses only a slight odor as compared to the constant foul stench of a leftsided artificial anus. There is also very little irritation of the skin if it is properly cared for. Each day the skin is carefully washed with warm water and good soap (castile), then dried and bathed with alcohol; being careful not to let any of the alcohol reach the mucous membrane of the wound. A modified Lassar's paste is used as a coating. Instead of using vaseline for a base as in the regular Lassar's paste I use paraffin. This sets to a firm wax when cold and must be heated each time it is used. When the skin about the artificial anus is well dried the heated paste is spread smoothly over the skin. It soon sets and makes a perfect protection.

The following is the technic of Brown (7): The abdomen is opened in the right rectus line sufficient for exploration. The cecum is sought and the colon carefully examined its entire length. All pericolic adhesions are severed and the appendix removed. The ileum is cut between two clamps close to the ileocecal valve. The distal ileum is closed. A lateral opening is made in the cecum, a large catheter inserted, and the opening closed tightly about the catheter with a purse string suture. A second purse string suture of a No. 1 chromic catgut is placed a quarter inch further out, and three long fixation sutures inserted beneath it. A stab wound is made at McBurney's point through which a forceps is inserted and the catheter and fixation sutures are pulled through the stab wound. The peritoneal surfaces of the cecum surrounding the catheter are scarified and drawn up snugly against the abdominal wall and fixed in the stab wound. A stiff rubber drainage tube is next inserted into the proximal ileum and fastened with a double purse string suture. The ileum is brought out of the lower angle of the rectus incision. The parietal peritoneum is well approximated to the ileum and the abdomen closed.

Later the continuity of the large bowel may be restored if the patient's health warrants and the colonic mucosa has returned to normal, but such a procedure must not be considered too early. Excision of the whole diseased portion may also be thought of. Lilenthal (8) removed the whole colon in such a case with a very satisfactory result. That, of course, is desperate surgery, but is warranted in view of the danger of malignancy.

MYOMA

Myomas are tumors composed wholly of muscular tissue or combined with fibrous tissues and arise from the muscular coat of the bowel. They consist of smooth or nonstriped muscle and fibrous tissue and sometimes contain typical gland islands scattered throughout in which case the growth is called an adenomyoma.

(To be concluded.)

Acidosis, Diabetic Coma and Insulin

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Acidosis, the term first used by Naunyn, must not be taken to mean an acid reaction of the blood or tissues. As was pointed out by Henderson, the reaction of the blood and tissue fluids is very constant and under no known condition during the life of the organism does the blood show an acid reaction. An acid reaction of the blood is incompatible with life.

What is acidosis? I shall try to describe the true conception of acidosis from the biochemical facts as they are taught in chemistry and physiology.

When different amounts of acids or alkali are added to water, the range of variation in the H ion is very extensive, whereas in blood the range is very limited, not extending beyond pH7 and pH7.52. In other words, blood can withstand the addition of considerable amounts of acids or alkali without much change in reaction.

This remarkable constancy of the blood reaction is due to certain substances in the blood, chiefly sodium bicarbonate and disodium hydrogen phosphate. These substances are known as buffer substances, meaning that they serve to damp down the effect on the H ion concentration which addition of acids or alkali would otherwise have. A better expression has been suggested by Bayliss, namely, tampon action, since the substances actually soak up much of the added H or OH ions.

Under normal conditions the amount of sodium bicarbonate, the chief buffer substance, is very constant, amounting to fifty to sixty-five volumes per cent. CO_2, and bears a definite ratio to the amount of carbonic acid. The carbonic acid is produced in large amounts during the process of metabolism. This ratio has been estimated as H_2CO_3: $NaHCO_3$= 1:20. The equilibrium between acid and base gives the blood its almost neutral reaction which is indispensable to the life of the organism. This ratio may be increased by the production within the organism of some fixed acid, such as oxybutyric and diacetic acids in the case of diabetes. The acids will combine with the sodium bicarbonate and liberate free carbonic acid. A rise in the H ion concentration under these circumstances is prevented by the remarkable sensitiveness of the respiratory centre to slight increases in the H ion concentration. The centre responds immediately with increased activity manifested by more rapid and deeper respiration and an increased elimination of the very diffusible carbon dioxide through the lungs. The elimination does not stop when the old level of carbonic acid concentration is reached, but proceeds until the original ratio between carbonic acid and sodium bicarbonate is established, and the reaction of the blood restored. If it stopped at the previous CO_2 concentration, the ratio would be too high because there is now less sodium bicarbonate.

Now, although the reaction of the blood has been maintained, there has been a loss of sodium bicarbonate and thus a diminished power to neutralize additional increments of acids into the blood. The diminution of the alkali reserve of the blood is the Van Slyke criterion for determining a condition of acidosis. This may be designated as the limited or specific definition of acidosis. This definition does not embrace all conditions that may raise the ratio between carbonic acid and sodium bicarbonate without decomposing any of the sodium bicarbonate such, for example, as occurs when an excess of carbonic acid is present in the plasma in cases of asphyxia. A more comprehensive definition is that of Henderson: "Any modification of the normal equilibrium between acids and bases within the organism whereby the power to neutralize acid is diminished, is to be regarded as a condition of acidosis."

The plasma itself contains much less phosphate than bicarbonate, but tissues contain a considerable amount of this substance which becomes available when necessary. Blood proteins are important buffer substances. According to circumstances, proteins may act either as acids or as alkali. They are therefore called amphoteric.

Under abnormal conditions, when an excess of acid is added to the blood plasma, they are first neutralized by $NaHCO_3$ and protein. When this is not enough the buffer substances present in the corpuscles may be used. This is accomplished by the transference of K and Na from corpuscle to plasma and by that of HCl from the plasma into corpuscle, thereby releasing base Na in the plasma which as NaCl reacts with H_2CO_3 giving $NaHCO_3$ plus HCl. The HCl on entering the corpuscle reacts with Na_2HPO_4 to form NaH_2PO_4 plus NaCl. The transference of acid through the membrane of the corpuscle indicates that the same process takes place in all other cells of the body.

Another very important means of defense of the body against acidosis is the elimination of N in the form of ammonia instead of urea. The importance of this mode of defense becomes evident when one realizes that one gram of ammonia can neutralize five times as much oxybutyric acid as one gram of $NaHCO_3$. In case of emergency where large amounts of acids are added to the blood the organism can fall back upon the calcium and magnesium of the bones. Gerhard and Schlesinger were the first to point out that in cases of severe acidosis the path of excretion of calcium and magnesium is changed from the bowels to the kidneys carrying with them oxybutyric and diacetic acids. Joslin found in one of his cases during coma, 0.55 gm. of these alkali in the urine, but only 0.15 gm. in the feces, whereas normally forty per cent. of magnesium is excreted in the feces.

We have described above how in case fixed acids are added to the plasma it combines with $NaHCO_3$ liberating CO_2 in the process. In order to prevent a rise of the H ion concentration this CO_2 is eliminated by the lungs as a result of hyperpnea. This hyperpnea is brought about by the sensitiveness of the respiratory centre to any increase in the acidity of its surrounding. The second important pathway for the removal of acid bodies are the kidneys. The

kidneys have a remarkable power of secreting an acid urine from a neutral plasma. If the kidneys excreted the neutral buffer substances after they have combined with the acids the body would soon be demineralized. Each molecule of acid would deprive the body of one molecule of base, the alkali reserve would soon be exhausted and the organism would succumb to acidosis. This is prevented by the power the kidneys have to excrete acid salts leaving behind part of the base with which they have combined. Henderson and Palmer found that in normal subjects it takes between two hundred and eight hundred c. c. tenth normal alkali to titrate the acid urine back to the blood reaction. In other words the kidneys eliminate from two hundred to eight hundred c. c. tenth normal acid in twenty-four hours.

A third pathway for the removal of acid bodies is through the intestinal canal. Some of the phosphoric acid produced in the body is excreted by the bowel.

CLASSIFICATION ACCORDING TO ORIGIN

From this brief review of the biochemical processes which are known to operate in acidosis, it becomes evident that acidosis can be classified, according to origin, as follows:

1. Acidosis due to external causes, such as asphyxia and the inhalation of carbonic acid gas.

2. Acidosis due to changes in the lung tissue whereby the free diffusion of carbonic acid is interfered with.

3. Metabolic disturbances. To this class belong the most important clinical conditions which are associated with acidosis. Chief among these are the severe cases of diabetes. The direct cause of the acidosis in these cases is the production of abnormal amounts of acids, mainly oxybutyric and acetoacetic, as a result of incomplete fat metabolism. The faulty fat metabolism is associated with a deficient carbohydrate utilization. The deficient carbohydrate metabolism may be due to a scarcity of available carbohydrates, such as is found in starvation, or it may be due to an inability of tissues to utilize carbohydrates, which is the case in diabetes mellitus. To this class belong also the cases of acidosis found in severe cachexias, such as carcinoma of the stomach and esophagus, cases of persistent vomiting of pregnancy, infantile diarrhea and vomiting, cyclical vomiting of children, and all conditions in which there is actual or virtual starvation with a complete lack or an insufficient supply of carbohydrates.

4. Renal disturbances. In cases of nephritis there may be an inability on the part of the kidneys to excrete the normal amount of H ions produced in the body. These accumulate in the blood and are neutralized by the buffer substances. The result is a diminution of the alkali reserve which gives us the clinical picture of acidosis.

5. Disturbances of the circulatory system and heart failure cause a deficient and slow blood flow with the result that the carbonic acid produced in the body is not removed as rapidly as in the normal individual. The H ions accumulate in the blood and cause a disturbance in the acid base equilibrium.

6. Toxic acidosis. This is chiefly due to inhalation of chloroform and ether. Almost all patients who have been under a general anesthetic for any length of time develop acidosis.

SIGNS AND SYMPTOMS OF ACIDOSIS

Increased pulmonary ventilation is one of the main safeguards of the body against acidosis; hyperpnea and dyspnea are therefore one of its chief symptoms. If the acid base equilibrium be sufficiently disturbed to produce a pronounced hyperpnea, dyspnea will be felt, while physical effort will accentuate it. Dyspnea due to such causes is to be found in diabetes mellitus and in cases of failure of the renal function. The labored breathing in these cases is not accompanied by cyanosis. It differs from the dyspnea in heart failure which is associated with cyanosis. Apathy, restlessness, loss of appetite, nausea and vomiting are the signs of an advancing coma and are due to the toxic effect of the acid bodies on the system and to dehydration.

As a result of the increased pulmonary ventilation and the washing out of the CO_2 liberated by the fixed acids, the CO_2 tension of the blood and therefore of the alveolar air is decreased. We have then an excellent index of acidosis by determining the CO_2 tension of the alveolar air. For this purpose the Frederica method is the most useful for clinical work. By this method one can estimate the carbon dioxide tension in a short time by a technic which can be easily learned by a physician or nurse in a few minutes.

Normally the carbon dioxide tension of the alveolar air varies between 36 and 45 mm. mercury. A tension below 25 mm. indicates a marked acidosis; a tension between 30 and 25 mm. indicates a mild acidosis.

Once the fixed acids are neutralized by the buffers of the blood they are excreted as acids in the urine. Here they can be easily tested for by the familiar tests of Gerhard and Legal. It has been pointed out by Folin that acetone forms only an insignificant part of the total acidosis and that Legal's test for acetone is really a very delicate test for both diacetic acid and acetone.

In the plasma the diminished alkali reserve can be estimated by the Van Slyke method, whereby the carbon dioxide combining capacity of the blood can be determined. The normal combining power of the blood for CO_2 varies between fifty-five and seventy-five volumes per cent. Figures lower than fifty per cent. in adults indicate acidosis. The normal figure for infants is much lower than for adults. Any figure at or above forty per cent. is not to be considered abnormal.

COMPLICATIONS OF ACIDOSIS

The most serious complication of acidosis is coma. The best known example is diabetic coma. As soon as the acid production exceeds the protective limit of the buffer substances acid intoxication appears, and the patient sinks into a coma. The coma may appear suddenly and be accompanied by deep, noisy respirations without stridor. The pupils are dilated, the pulse is small, and the temperature is usually below normal. On the other hand, the coma may be preceded by headache and sensations resembling intoxication with alcohol. Other prodromal symptoms are vertigo, unrest, delirium and fear, until finally loss of consciousness and collapse become prominent. Once the patient is in coma, death sometimes occurs very rapidly, at other times only several days after the onset of coma. The chances for recovery are best

in diabetic coma, where with the combined use of insulin and proper dietetic and hygienic measures many a patient has been saved.

DIFFERENTIAL DIAGNOSIS

Coma may be due to a large number of causes. One must remember, however, when called upon to see a patient in coma, that there may be more than one cause for the condition and that it may not be at all easy to arrive at the proper diagnosis. Sometimes, in the prodromal stage of diabetic coma, there may be a large amount of casts in the urine which may give rise to uremic as well as to toxemic coma. Broadly speaking, one may divide the cases of coma, for the purpose of differential diagnosis, into those cases where the coma develops in the course of a known malady which may have existed for years, and into those cases where coma is the first sign of disease. In the first class belong the diseases due to metabolic disturbances. However, there are cases of diabetes and nephritis where the symptoms have passed unrecognized until coma announces the disease.

A careful history, if obtainable, is the first step in the diagnosis. Has the patient been suffering from any disease prior to the onset of the coma? The nature of the symptoms. Is there any evidence that the coma may be the acute effect of drugs, such as alcohol, opium, chloral or veronal, or of carbon monoxide poisoning? The general appearance of the patient, pallor, cyanosis or the bright cherry red color found in carbon monoxide poisoning. Evidence of paralysis or head injury. Are there evidences of edema or ascites? Pupils, are they dilated, pin point, etc.? Finally come the examinations of the urine, blood and respiration.

CAUSE OF DIABETIC COMA

As oxybutyric acid, acetoacetic acid and acetone are excreted in the urine all three substances have been considered to be the cause of coma. But acetone is only a decomposition product of acetoacetic acid so it can hardly be responsible for coma. The work of Neubauer, Kennaway and Hurtley would seem to establish the view that acetoacetic acid, and not oxybutyric, is responsible for coma. It has also been shown by Trevan, that when acetoacetate is injected into a cat in neutral solution hyperpnea, coma and a fall in blood pressure take place. These results follow, although the reaction of the blood is not changed. Trevan and Hurtley have therefore suggested that the acetoacetic acid did not produce any symptoms in virtue of its H ion group, but because of the enolic group $\overset{COH}{CH}$. Oxybutyric acid has no enolic group and therefore does not produce this effect.

This work explains why injections of $NaHCO_3$ is unsatisfactory in the treatment of coma. $NaHCO_3$ will raise the alkali reserve of the blood and prevent demineralization of the body, but it can not influence the poisonous action of the acetoacetic acid. This was confirmed by an observation of Allen who raised the alkali reserve of the plasma to and above normal without influencing the fatal outcome of the coma.

TREATMENT

I shall confine my few remarks to the treatment of diabetic acidosis and coma. An acidosis in the course of diabetes means that the carbohydrate utilization has fallen below the minimum requirements of the body. The indication for treatment is to raise, by all known means, the glucose metabolism. Diet, today just as much as before the advent of insulin, is the most efficient means of controlling diabetes. One must not fall into the mistake of allowing the patient to eat all he wants just because he gets insulin. Insulin is a very useful drug and some diabetics can not live without it, but remember that insulin, administered without a proper understanding of what it can do, may do harm.

Alkalies, though not used at present in the excessive doses that we used to prescribe a number of years ago, are nevertheless useful, 1, to raise the alkali reserve and prevent demineralization of the system, and 2, to enable the neutralized acids to be excreted more freely.

Alcohol in small doses well diluted is indicated in this condition.

Plenty of rest and general hygienic precautions are important prophylactic measures against coma. The patient should avoid chilling, exposure and overwork.

INSULIN

The advent of insulin has changed the whole outlook of the diabetic. From all indications so far, it would seem that once a patient has become a well established diabetic, he will probably retain a diabetic tendency for the rest of his life even with the use of insulin.

The methods of using insulin and the aims to be achieved by its use differ among the various workers in metabolism. Some use insulin to the point of getting a normal fasting blood sugar, while others try to prevent glycosuria but do not think it advisable to lower the blood sugar to normal. Still others, like Boothby and Woodyatt, do not object to the presence of both glycosuria and hyperglycemia.

In case of the average diabetic who has to work for a living, it is a question whether they can be subjected to that lengthy and painstaking supervision necessary in order to obtain a normal fasting blood sugar. Moreover, once this is obtained, the increase in diet which must follow eventually will in most cases raise the blood sugar above normal. However, it certainly should be the aim of the physician to clear the urine of all sugar. This I should consider the minimum requirement of any efficient method of treatment with or without insulin.

As a general rule, acidosis and coma are the clinical indications for the use of insulin. The fact that a diabetic passes sugar in the urine is no indication for its use. How often do we get patients who pass four to six ounces of sugar in twenty-four hours' urine, but when put on a proper diet will return in a few days sugar free. These patients surely have a fairly large carbohydrate tolerance and when they adjust their diet to the basic metabolism requirements will remain sugar free. Surely such a patient is not a case for insulin treatment. Insulin is to be given to diabetics who, after a careful tolerance test, show a carbohydrate metabolism below the requirements of the individual. As a general rule, but not without exceptions, when the carbohydrate metabolism of a patient falls below ten per cent. of the total energy requirements this patient is in danger of developing acidosis and insulin is indicated. The insulin should be continued until such time as the carbohydrate tol-

erance has been raised to above fifteen per cent. of the total energy requirement.

After what has been mentioned regarding the indications for insulin, it is not at all surprising to find that the most dramatic results of insulin are in cases of acidosis and coma. Patients who have been deeply unconscious have been brought back to consciousness in a few hours with the use of insulin.

When insulin is given to a patient in coma there is great danger of producing a hypoglycemia with no signs or symptoms to guide us. Repeated blood examinations are the best index of the blood sugar level. When this is not feasible, the patient must be catheterized every hour and the urine examined for sugar. When the urine becomes free of sugar, one must consider carefully the time and dose of the next insulin injection. Under these circumstances it is probably best to give a definite amount of glucose with each unit of insulin. One to one and a half gm. glucose for each unit of insulin given by mouth, subcutaneously or intravenously as the case may be, is the best precaution against hypoglycemia.

It is usually stated that one unit of insulin can bring about the oxidation of one gram of glucose. So that at the beginning it is safe to give as many units of insulin per diem as there are grams of sugar in the twenty-four hours' urine passed. It is best to give insulin in three portions daily half hour after breakfast, lunch and dinner. As the sugar disappears from the urine, decrease the insulin gradually or increase the diet if the patient is losing more weight than is desirable.

Hypoglycemia may result from too large a dose of insulin or from the fact that the patient omits a meal. Vomiting, diarrhea, overwork, enteritis with lack of food absorption or an increase in the natural tolerance for carbohydrates, may cause hypoglycemia.

A patient who is given insulin should be warned against the early symptoms of hypoglycemia, such as sudden hunger, weakness, tremor, chilly sensation, dizziness, fatigue, nervousness and flushing. More severe symptoms are sweating, marked anxiety, delirium, unconsciousness, convulsions and collapse.

In the mild cases the juice of an orange, a lump of sugar or a tablespoon of corn syrup is enough to give complete relief of symptoms. In severe cases where the patient is unconscious, hypodermic injections of adrenalin and intravenous injections of glucose are necessary.

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Anomaly of Peritoneum*

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The man in which this condition was found was forty-five years old. The diagnosis of chronic appendicitis, peptic ulcer, and tentatively, chronic cholecystitis was made. He also had a ventral hernia and bilateral inguinal hernia.

He was operated upon July 15, 1925, by Dr. James A. Mattison. A definitely chronically inflamed and adherent appendix and gallbladder were found and removed, also a duodenal ulcer which was excised, inverted and a posterior gastroenterostomy performed. The herniæ were repaired. He made an uneventful recovery.

The completed stomach operation presented the picture of a posterior gastroenterostomy which bore absolutely no relation to the transverse colon and the transverse mesocolon, the reason for this report. A brief description of the development of this part of the peritoneum will show how the anomaly occurs.

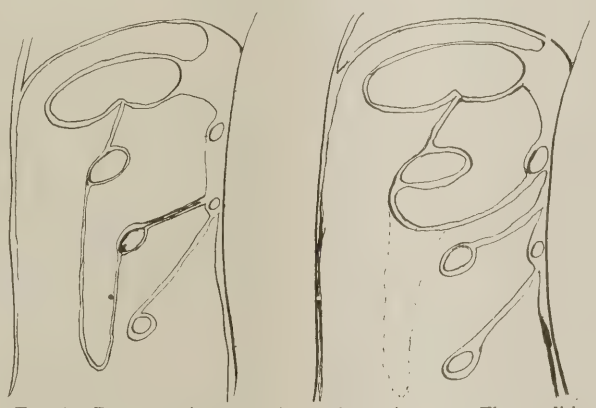

Fig. 1.—Demonstrating anomaly of the peritoneum. The condition found in the case reported is shown in the figure at the right. (*Gray's Anatomy*, p. 1252, Figs. 974 and 975.)

In fetal life the omental bursa, which at first reaches only as far as the greater curvature of the stomach, grows downwards as a double layered pouchlike fold, the interior layer being derived from the right leaf of the primitive mesogastrium, its exterior layer from the left leaf. This omental sac or greater omentum extends downward as an apronlike fold in front of the transverse colon and small intestine.

The anterior layer of the transverse mesocolon is at first quite distinct from the posterior layer of the omental bursa, but ultimately the two blend, and hence the greater omentum appears as if attached to the transverse colon. During a considerable part of fetal life, the transverse colon is suspended from the posterior abdominal wall by a mesentery of its own. This condition sometimes persists throughout adult life (as it did in this case), but normally adhesion occurs between the mesentery of the transverse colon and posterior lamella of the greater omentum.

The persistence of the fetal type in this case explains then why it was not necessary to perforate the transverse mesocolon in order to reach the posterior wall of the stomach. It was the posterior lamella of the greater omentum which was opened, the transverse mesocolon, of course, taking no part in the boundary of the lesser peritoneal sac.

*From the Surgical Department of the National Soldiers' Home Hospital, Sawtelle, and delivered before the Santa Monica Branch of the Los Angeles County Medical Society, August 11, 1925.

Problems in Venereal Prophylaxis

ETTIE A. ROUT

London

After spending some three or four months in Chicago, studying and lecturing, there are a few observations I desire to record, in the hope of contributing to a better understanding of the problems involved.

COMPULSORY NOTIFICATION, EXAMINATION AND TREATMENT

My opinion is that legislation providing for these matters is right and necessary, in the interests of the health of the individual and of society. The fact that not all cases are reported by medical practitioners and not all cases are under treatment does not nullify the benefits of such legislation, though such nonobservance may, at times, lessen the benefits. The mere existence of the legal machinery is often sufficient to ensure that diseased persons do voluntarily seek treatment and voluntarily refrain from endangering the health of others. Similarly the prohibiting of treatment by unqualified persons and prohibiting the sale of quack remedies undoubtedly protects the public from a large amount of these evils.

In operation, however, we cannot group together cases of syphilis and cases of gonorrhea, so far as this kind of legislation and its benefits are concerned. We know how to render syphilitics noninfectious with almost absolute certainty by a comparatively short course of treatment, and the general public is frightened of syphilis and usually willing to consent to such treatment. The course of treatment being comparatively short, the followup system applied to absentees is fairly efficient. There does not seem to me a doubt that the arrest and isolation and treatment of syphilitic prostitutes known to be spreading disease are measures of great social value; and I am sure they can be operated with kindness and efficiency and without imposing undue hardship or humiliation on women who are catering to the sexual needs of the community.

But the gonorrhea cases furnish a more difficult problem—especially in women. The public is not afraid of gonorrhea; men and particularly women postpone and neglect securing adequate treatment; diagnosis and treatment are in many cases more or less uncertain; the standard of socalled cure is hard to define; and in fact it is doubtful if women really badly infected can be cured at all in the light of our present knowledge. In any case the course of treatment is so long—months and sometimes years being necessary—that patients become wearied and disheartened; and it is difficult, if not impossible, to devise a followup system which will insure their attendance till discharged by the medical officer.

STATISTICS

Nearly all the statistics I was shown in Chicago and New York were officially admitted to be incomplete and misleading. In a clear and straightforward report issued by Dr. Louis I. Harris, Director, Bureau of Preventable Diseases, Department of Health, of New York, under date December, 1923, the director repeatedly deplores this fact.

"The total number of reported cases for the year was, of course, small in relation to the actual number which occurred in the city during the year," he says. "What can the department do to obtain more correct statistical data in regard to syphilis in the city? The laboratory has apparently reached very nearly the limit of its usefulness as a source of information. . . . It is in the case of gonorrhea that both institutions and private physicians are particularly remiss in failing to report cases under their care."

"The total number of syphilis cases reported by institutions during the year is 4,060. Evidently a small fraction of the total cases of disease found in syphilitic persons treated by our hospitals during the year," says the director; and the total number reported by physicians for the year was 2,012. And as to gonorrhea, the total number reported for the year by institutions in all boroughs was 2,384, and by physicians 1,194. That is to say, the official statistics of new cases show up as follows for the year 1923 for the city of New York, with a population of over seven million persons: syphilis, 6,072; gonorrhea, 3,578.

And yet we know there are at least four times as many cases of gonorrhea as of syphilis. The principal value of these statistics, therefore, is to prove that there is wholesale concealment and wholesale neglect; and no statistical information should be issued officially unless accompanied by official warnings, such as those given by Dr. Louis I. Harris, that the magnitude and significance of the venereal disease problem are much greater than can be exposed by official statistics.

CHICAGO VS. NEW YORK

Public opinion, and consequently official action, is more advanced in Chicago than in New York; but the readiness of the departments of health of both cities to work in generous rivalry and mutual helpfulness is necessarily stimulating to thought and action. Chicago struck me as the more energetic; New York as the more humane; thus their cooperation should ensure efficiency as well as kindness, and the sharing of knowledge and experience will make both departments richer and more fertile.

REGULATION OF PROSTITUTION

There is a delusion in both cities that regulation has been abolished. Really, more or less inefficient regulation has been substituted for more or less efficient regulation. When prostitutes are subject to arrest, hospitalization, and release if and when noninfectious, a yellow ticket system is practically operative: the only thing missing is—the yellow ticket. It was surprising to hear apparently intelligent Americans allege with one breath that regulation was useless because prostitutes could not be guaranteed as noninfectious and with the next breath allege that nonregulation was valuable because surreptiously it did that very thing. For the efficient regulation of prostitution, what we obviously need is

French law, English administration, American sanitation, and German science. The French cannot carry out their own laws efficiently because of careless and insanitary habits; the English cannot make laws about prostitution, because they are without mental courage; the Americans cannot administer such laws because of their police methods; and the Germans are necessary because their disinfectants and prophylactics are the most suitable for the purposes. Vice can be made safe as soon as these factors are combined in practical operation.

CRIMINAL OFFENCES

I was informed in New York that there is actually an amendment to the code of criminal procedure in relation to the definition of vagrant, by means of which any person who sells or offers to sell and any person who buys or offers to buy sexual intercourse can be arrested as a vagrant—this act to take effect September 1, 1924. But sexual intercourse, regular or irregular, legal or illegal, mercenary or nonmercenary, is not and cannot be made a crime, and most people still decline to regard it as even antisocial except in so far as it spreads disease or sows illegitimacy. Efforts to make criminal what is merely immoral result in placing power in the hands of the police which it is subversive to the welfare of all sections of society for them to hold. The present proceedings in the morals courts prove this. For example, I sat beside the judge in Chicago morals court and heard this case: A foreign commercial traveler was charged with having contact with a prostitute in a hotel. He suffered loss of business and delay; then his case was adjourned; at the adjournment his consul appeared for him with sworn testimony to the effect that the traveler had gone to the hotel on arriving late at night, had been offered the only available bedroom, went up to see it, deposited his belongings there, left the door ajar, and came down to the hotel manager's office to complete engagement and pay for the room. On returning upstairs he encountered the police, who accused him of immorality with a prostitute in the next room. The traveler denied the charge; so did the woman; and the hotel manager's evidence and register corroborated the traveler's statements. The judge dismissed the case and reprimanded the police. This kind of thing does not establish morality: it merely reinforces blackmail. Immorality cannot be abolished by law—only replaced by virtue; and virtue is based on freedom, health and cleanliness—not on fear, disease and filth.

FREEDOM OF CONDUCT

It should be frankly admitted that there is a vast amount of irregular sexual intercourse in all sections of society. In so far as this is casual, it is highly dangerous; in so far as it is loveless, it is highly antisocial. But the large measure of economic independence American women enjoy renders certain the increase of romantic friendships. A thousand years ago the peoples of Europe fought and won the battle for freedom of movement: the feudal system was abolished and slavery of body became a thing of the past. Try to fancy a modern employer claiming the "right of the first night" with the bride of one of his workmen, and we realize immediately how far we have traveled towards liberty, equality and fraternity. Five hundred years ago we fought and won freedom of thought. Religious persecution gradually ceased; science superseded sacerdotalism; the spread of knowledge began, and slavery of mind received its mortal wound. Today we are fighting and winning the battle for freedom of conduct. Men and women alike are claiming their bodies as their own, to do what they like with, so long as no harm is inflicted on others. It is the welfare of the human group—society—that now appeals to our conscience rather than the interests of the prehuman unit—the brute family of father, mother and cubs. Then we see that it is not continence—still less abstinence—that will stamp out prostitution but rather the wider and freer development of romantic and passionate love relationship. Prostitutes are inconstant and promiscuous; lovers are constant and highly selective; and it is promiscuity which spreads disease, and faithfulness which limits it. We cannot regulate irregular intercourse by having none of it; but we can easily direct it along its natural channels—unions between those who love one another. Chastity is sexual intercourse between those who love one another; unchastity is sexual intercourse between those who do not love one another; no sexual intercourse at all is neither chastity nor unchastity; it has no significance at all.

SOCIAL ENVIRONMENT

The general social environment in Chicago and New York lends itself to the development of friendships between men and women. The well warmed closed in comfortably upholstered motor car which almost everybody possesses renders it possible to set up a private room at any time in any place; and high wages and the keen demand for labor enable every member of the family to live independently if they wish. Gigantic buildings are being erected as bachelor apartments—simply a bedroom, bathroom and perhaps a kitchenette—and these are rented by single men and single women. Road houses are all over the landscape—dance and supper rooms with sleeping accommodation and ample parking for cars. The conglomeration of different nationalities and even different races tends to broaden ethical standards in some respects; and the devotion of the newspapers to the personal affairs of other people is relished by the great mass of the public, and tends to set up a moral common denominator for all classes of society. Nominally hotels do not let bedrooms to men and girls: actually there is no difficulty in engaging rooms in most hotels; certain hotels cater almost exclusively to this kind of accommodation, carrying on business by means of more or less expensive understandings with the police. The least harmful effect of legislative restrictions is to increase the unearned increment on the policeman's salary. The most harmful is to separate immoral women from their toilet arrangements and thus cultivate microbes on the unwashed genitalia of men and women.

MEDICAL PREVENTION

I was informed authoritatively both in Chicago and New York that the hospital and clinic provision for treating venereal disease cases was inadequate. Every effort should be made to increase this to meet the needs of the hour, first for the sake of cleaning up cases of disease, and second for the sake of in-

forming the public as to the magnitude of the evil. Once the public thoroughly apprehends how fearful the venereal disease problem is, they will soon convince themselves that it is quite as moral to prevent disease as to cure it—and much cheaper. Undoubtedly every case cured or rendered noninfectious is an important factor in prevention; but no infectious or contagious diseases have been brought under control by picking up developed cases as they arose and curing them; and with many cases of venereal disease cure is only a relative term. The way to stamp out contagious diseases is to prevent new cases arising at all.

It is fatuous to contend this can be done by lessening contacts. Our sexual contacts have probably been much the same per thousand per annum for the last million years. I have heard American social uplifters argue that venereal disease stands in direct and definite ratio to the number of contacts; therefore the less the number of contacts, the less disease. It is a preposterous fallacy. By means of antisepsis all forms of venereal disease can now be prevented with almost complete certainty, regardless of the risks incurred.

Numerous instances are quoted to show that in certain badly conducted brothels, American soldiers were poisoned with sexual diseases by French prostitutes—each prostitute having contact with from twenty to fifty soldiers a day. This disgusting performance should not have been permitted, but in any case it need not have resulted in disabling the soldiers. If instead of wasting their time counting contacts, the American social uplifters had established prophylactic stations in the brothels, the health of the soldiers would have been saved; and what was the American medical service about? They had no more right to let men go into venereal areas without antiseptics than they had to let them go into gas areas without masks or walk through a shower of shrapnel without a helmet. And when it was known that the men had been in a venereally poisonous area, failure to provide the antidote was tantamount to aiding the enemy by rendering our men unfit to fight. So now, in the midst of the peace which passes all understanding, no section of society has any right to hinder or oppose the spread of what is really life-saving knowledge—antisepsis as applied to any contagious diseases, more especially contagious diseases which are hereditary or congenital, and afflict innocent and guilty alike.

PROPHYLACTICS

It must, however, be admitted that many substances recommended as prophylactics are unsuitable or disagreeable. The meanest man or woman has some appreciation of sexual pleasure, and prophylactics which lessen pleasure will never be popular—therefore will be of little use in preventing disease. For example, calomel ointment is unsuitable internally for women; it causes salivation and irritation. Greasy substances used beforehand are thoroughly disliked, as being messy and uncomfortable, reducing friction and destroying direct contact. I have tried out various kinds of suppositories for years and found all of them unsatisfactory in different ways—usually because of stickiness or greasiness. For nearly two years I have been experimenting with different kinds of effervescing suppositories, and at last have attained success with a tablet which is being sent to Chicago for a prophylactic packet for women. Laboratory tests have shown that these prophylactic tablets will destroy the gonococci by contact in one minute—the weakest dilution of chinosol which kills the gonococci in one minute is one in four thousand; and the tablet gives us approximately one to one thousand to one in two thousand, assuming an average amount of secretions. The tablet is stainless, odorless, tasteless, nonirritating, nongreasy, readily soluble in moisture but unaffected by heat—therefore of great value for tropical countries, where the ordinary cocoa butter suppository is useless. After prolonged experimental research, in which I have been aided by bacteriologists, physicians, government analysts, and manufacturing chemists, and careful trial, I am now satisfied something has been evolved which will be acceptable to ordinary men and women for use before connection, when it will protect both parties; and if used afterwards only, it will help to protect women from infections in the genital passages.

Such a tablet, when properly packed, is readily portable; requires no apparatus; and does not affect sensation. If it could be put on sale as frankly and simply as toothpaste or hairshampoo, fresh infections would certainly be largely reduced; and there is really no natural reason why prophylactics should not be sold as openly as toothbrushes. We have long since ceased to rely on dirt and disease as aids to sanctity: why then do some of us still wish to found sex morality on them?

EDUCATION IN SEX HYGIENE

I interviewed numbers of Americans who favored such education, but in most cases found their ideas hazy and confused, no matter how high their ideals may have been. They really did not know what to say nor where to begin in regard to the teaching of human sexual reproduction, let alone human sexual intercourse. Vaguely there was an agreement that it was desirable to begin with the vegetable kingdom—perhaps begin with asexual reproduction; but nobody saw clearly where the paths in this educational hinterland were leading. Many used the term social hygiene as a cover for doubt and indecision. Doctors thought there would be fewer unhappy marriages if wives would take more interest in marital intercourse: the problem of frigidity in young married women baffled them. Welfare workers seldom had any ethical ideas higher than the doctrine of continence—a mingling of savage self-immolation and barbarous cruelty—and rejoiced that they wished for none. A few doctors wanted still more sex suppression: but the majority were wholeheartedly in favor of sex expression and preparation and training of young men and young women for marriage.

Everybody was in perfect agreement that prophylaxis should certainly be taught to venereally infected persons—men and women—to reduce the chances of reinfection. That proposal I made to the health departments both in Chicago and New York, and it was readily accepted by them, and by conferences of medical practitioners and others. It was also accepted as desirable that lectures on antisepsis

in regard to the venereal diseases should be given to medical students at the colleges and universities. Lectures to the general public were more difficult to arrange, but were not regarded as wholly impracticable. The chief obstacle was the misapprehension that teaching prophylaxis would lead to encouraging immorality; but even some apparently hopelessly unpromising minds have been disabused of this notion during the last two or three years. Those of us who have taught prophylaxis and given out packets by the thousand know perfectly well that it is impossible to give such teaching and distribute such medicaments properly without at the same time enhancing the danger sense of those we instruct. Thus fewer risks are run—not more. Such caution is admittedly a poor substitute for virtue, but it is better than neglect leading to damaged health.

WELFARE WORKERS

The training and experience of welfare workers in Chicago and New York seemed to me quite as inefficient and inadequate as in other English speaking communities; and many of them obviously suffer from fixation of the brain cells. A disastrous development of welfare work is the setting up of subsidized societies and colleges, endowed with subscriptions available only for moral suasion efforts. It is clearly the duty of honest welfare workers to prevent venereal diseases by all the means known to society. No advocate of prophylaxis dreams of underestimating the importance of selfcontrol and constancy as factors in lessening risk: we merely say that chastity is a positive, not a negative, virtue, that society must provide for the normal sexual needs of its members, and that the majority of men always have and always will regard women as indispensable to health and happiness. But it is practical experience of life which teaches this—not argufying about it. Therefore welfare workers should undergo training in the venereal disease clinics—public or private. I attended one private clinic in Chicago five hours a day for several weeks, where the infections were the result of ignorance, innocence, drunkenness, and sex appetite, the majority of the patients being taxidrivers, policemen, industrial workers, shop girls, prostitutes and pimps. Scarcely any of the men and none of the women had an adequate knowledge of prophylaxis, but they were all ready to listen to instruction and most of them anxious to acquire knowledge. One important feature was that the pimp brought in the prostitute he was running to see if she was free from disease, to learn how to keep her clean, and if found to be infected—he arranged and paid for her continuous treatment. Thus the pimp has come to have a social value, as the medium through which medical supervision can be exercised where it is most needed. Women welfare workers are the most inexperienced as to the sex life of fair average collections of men and girls; and they almost entirely fail to realize the atom sorting processes to which humanity responds, whereby some women inevitably become prostitutes, some free lovers, some conventional wives and mothers, some foster parents, some neuter workers, some perverts, and some apparently repeat in their adult life the embryonic race history of their ancestors—from promiscuity to monogamy.

THE FUNDAMENTAL POSITION

The fundamental position is this, and till it is recognized no headway can be made: That the sexual possibilities of mankind are greater than the sexual requirements of permanent love and marriage. Therefore irregular intercourse is inevitable for imperfect humanity, and failure to make this irregular intercourse safe will result in making marriage the most dangerous of all our social institutions.

20 Bedford Street, Strand.

The Prescription of Exercise and Diet*

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New York

(*Concluded from page* 614)

Printed form.—The best form of diet prescription is printed, and for this purpose there are several varieties.

The health consultant may have at his disposal printed diet sheets for different diseases and conditions. The Life Extension Institute, which uses this method, has twenty-five different diet forms. These fill the need relatively well. They are so convenient, however, that it is easy to prescribe the diet which most nearly fits the case, and to be satisfied with an approximate instead of an exact prescription. This method has the disadvantages of the Bed of Procrustes.

Prescription by food classes.—An endeavor has been made to place on a single sheet the common articles of food arranged according to the classes in which they fall, with reference to chemical composition, bulk, vitamine contents and appropriateness to different pathological and constitutional conditions. This has worked out well in private practice and in health clinical service. For example, a health client who is constipated, nephritic, fat, with pyrosis and colitis, can be instructed on this one sheet, whereas, if we had separate sheets for each condition, we would be at a loss to know which one to select.

Prescription by menu.—It is a great help to the client, and to the client's wife, to be given a series of menus for breakfast, dinner and supper, which can be used as a guide for the diet. This requires a great deal more preparation of printed material, time and trouble, but it eventually will become one of the standard methods in health prescription.

*Read as part of a symposium on health examinations, presented under the auspices of the Medical Society of the County of New York and the New York Academy of Medicine, February 3, 1925.

Books.—The lay public is acquiring much information on diet, exercise and other practices in life management. There have been prepared books on the subject of diet, written by physicians, which could be used to aid the efficiency of the diet prescription. It will be wise, however, for the physician to become acquainted fully with the contents of the book before adding it to the prescription. *Diet and Health with a Key to the Calories,* written by Lulu Hunt Peters, M.D., can be highly recommended. A similar book on constipation would make a great contribution to the general welfare.

PHYSICAL CONDITIONS UPON WHICH THE PRESCRIPTION IS BASED

In diet prescription we must consider three main elements: 1. The gastrointestinal tract. 2. The entire constitution. 3. The question of allergy.

The gastrointestinal tract.—The high spots in the gastrointestinal tract are the stomach and colon. In the stomach we have to consider two outstanding conditions. The first is atony, a weak stomach with delayed digestion and fermentation. The characteristic accompaniments of this condition are ptosis and asthenia. This condition requires a rapidly digestible diet followed by exercise and constitutional stimulation, with, perhaps, direct therapeutics. The opposite condition, hypertonicity, with contracted, rapidly emptying stomach, with increased hydrochloric acid and tendency to ulceration, will receive its proper dietary treatment according to the well established medical procedure. The colon similarly presents the same outstanding features—hypertonicity, and the opposite atonic static condition, although stasis quickly accompanies spasticity. There is a large field for hygiene and therapeutics combined.

The whole body.—The circulation, nervous system, glands, muscles, skin, and again the gastrointestinal tract, are all affected favorably or unfavorably by what is offered for digestion. Here again, the most prominent factors are the carbohydrate and protein poisons, which must be considered with due regard to deficient or too rapid metabolism. Under this heading should be considered all of the tendencies toward fibrosis, deterioration—which is the term to be preferred to old age—and the ever present but often neglected endocrine background.

Allergy.—In the future, we shall be much more able to trace constitutional conditions, not apparently associated with the digestive tract, to specific protein sensitization. Many a child has been seriously damaged by fond parents who have insisted on his eating oatmeal or other foods to which he is sensitive. We are now getting large numbers of cases of hardening arteries in adolescents and young adults, which, when thoroughly searched, reveal some protein sensitization. It is a question of whether this will not throw a revealing illumination upon the hitherto obscure causes of adult arteritis and hypertension.

SUMMARY

In addition to the ordinary clinical indications for special care in diet, the health consultant must be alert to provide special guides in cases which show a preclinical fibrosis in the circulation, lung or kidneys, in constipation, overweight and in calcium and vitamine deficiency. With all of these factors in mind, the physician must be alert and skillful in actually producing the desired change in the life habits of his client. This is a feat far more difficult to accomplish than mere diagnosis, however difficult that may be.

EXERCISE

Muscular exercise is useful in various fields of medicine. It may be used to aid the actual disease. It is helpful in prevention of illness and in the correction of such preclinical conditions as constipation, early fibrosis, overweight and ptosis. It is particularly valuable in the program of the health physician in the development of a degree of health superior to the ordinary mediocre condition of the man in the street.

Exercise will not be considered from the viewpoint of developing mere superior muscular ability or muscular size. We are not interested in the development of a winning athlete or a clever gymnast. We are concerned in using athletics and sports for the improvement of living, and we permit the faddist who wishes to use his body as a means of gaining prominence and applause, to pursue his course as he sees fit. Large muscles are out of date. We want only such muscular equipment as will support a vigorous life and will provide a sufficient basis for reasonable success in an enjoyable and healthful pastime. The use of exercise in clinical and preclinical medicine depends upon its values. The values of exercises depend primarily upon their effects. The effects of exercise fall into the following three fields: 1. Anatomical. 2. Physiological. 3. Psychological.

For the anatomical and physiological effects, we have suggested the following classification:

MOST TYPICAL RESULTS

1. Local	Immediate	Mechanical	Muscular contraction—vasorelaxation
2. Local	Immediate	Chemical	Oxidation — Sarcolactic Acid CO_2 produced
3. Local	Secondary	Mechanical	Increase in size—increased vascularity
4. Local	Secondary	Chemical	Food storage—decrease fat and waste
5. General	Immediate	Mechanical	Body massage and jar—blood pressure raised or lowered
6. General	Immediate	Chemical	Transmutation and transfer of food waste and excretion
7. General	Secondary	Mechanical	Increased tone in all tissues — posture improved
8. General	Secondary	Chemical	Increased metabolism in all tissues

APPLICATION OF EXERCISE TO MEDICINE

The application of exercise depends upon the health consultant's knowledge of its effects, his knowledge of the various kinds of exercise, which correspond to his knowledge of the various items in the pharmacopœia, and lastly, it depends upon his skill in applying the right exercises in the right way to the life of his client. While each physician should have a skilled clinical assistant in this subject at his disposal, yet he cannot guide this assistant correctly without study, experience, personal observation and personal use of the exercises which are especially good for himself.

GENERAL HUMAN NEEDS OF EXERCISE

Anatomical.—It is a biological fact that man comes from an ancestry of quadrupeds, who have gradually

assumed an upright position, which is responsible for much structural deficiency. Assuming an upright position, the head tends to fall forward and downward, the spine to increase its curve, the ribs to drop and the chest to flatten; the lumbar curve is increased and the arch of the foot breaks down. These are called structural ptoses. They are the result of the relative inability of the body to fight successfully against the continual effect of gravity. They are a sign of insufficient vitality. This is usually called bad posture. Accompanying this structural ptosis is visceral ptosis. The heart, lungs, liver, intestines, in fact the whole body tends to slump downward, and the lower abdomen to bulge. This is also a sign of deficient gravity resistance, due to inferior vitality and muscular weakness. Circulatory ptosis, due to deficient splanchnic tone, accompanies these conditions, and we have the familiar asthenic complex. Properly selected exercise should be directed to the sustentacular muscles, which raise the chest, straighten the dorsal spine and reinforce the lower abdominal wall, overcoming the three classes of ptoses, structural, visceral and circulatory. The campaign against asthenia results in a man with an erect head, large chest and slim muscular abdomen. Without these characteristics, no approach to one hundred per cent. physical condition is possible. This must be explained to the health client. The proper exercise is selected and taught. He should return after a brief period and his posture should be retested. The comparative girth of chest and abdomen should again be determined and his improvement noted for his encouragement and the insurance of the continuation of his program. The exercises for this purpose can be found in some of the newer books written by physicians for this specific purpose.

Physiological.—The great physiological need for exercise is occasioned by the fact that our ancestors survived because they adapted themselves muscularly to the necessities of a vigorous motor life. For this reason fifty-five per cent. of the body weight is muscular, and more than half of the brain is concerned directly in muscular movement. Similarly, the whole organic equipment is designed to support an active muscular life. At present, the average man and woman do not get this activity. As a result, the organic equipment, running at under one quarter to one third its normal load, deteriorates and premature old age results from stagnation and selfpoisoning. Nine tenths of civilized men and women are for this reason inferior specimens of humanity, and inevitably destined to premature senility. This may be overcome by reestablishing habits of exercise by making it feasible, interesting and attractive. It is the health consultant's duty first to ascertain what the normal exercise program should be and to place the client enthusiastically on the road.

Psychological.—Our mental and emotional selves are adjusted to active motor lives and are relatively starved because of the deficiency of incentive and opportunity characteristic of civilization. The reason why men like to go hunting and fishing and enjoy games like tennis, baseball and basketball, which involves throwing, running, catching and hitting, is because these things were formerly paramount essentials to survival. If he cannot indulge in these, he does so vicariously by attending a baseball game, a prize fight, or listening to reports of these over the radio, or reading about them. Some daily newspapers carry from one to three pages of sport news for our vicarious participation in motor work. The same is true of recreation in general. The recreational life of the ordinary individual must be returned to the point near the normal if lives are to be fully sane and happy. A large part of the health consultant's duty is to seek opportunities for this active participation. He should know the gymnasiums, play grounds, skating rinks, coasting hills, tennis courts, hiking trails and camping places that are available for his clients. And he neglects his duty if he neglects this service. Incidentally, and most important, he should be conversant with them himself for his own purpose.

Standard exercise program.—While there are exercises which are best for every one, yet a general exercise schedule which can be utilized falls under the following headings: 1, Daily morning exercise; 2, daily walk; 3, workout; 4, Saturday afternoon; 5, Sunday holiday.

Daily morning exercise.—The daily morning exercise period should be brief, interesting and attractive, and directed definitely toward the individual needs. Several systems are now available.

The daily walk.—The daily walk should be graduated to the needs of the client. It should follow interesting roads with a definite objective. The best prescription to be written for a walk is to take a dog, a cane and a friend. The walk can be used to increase the chest expansion and improve posture. One of the best prescriptions is to fill the chest and then, on the next two steps, to take in additional little breaths; on the third step, to breathe out slightly—a rhythm of in, in, out, in, in, out, lasting for fifteen steps. Breathe regularly for fifteen steps and repeat.

The workout.—The workout is a period of active, perspiration producing exercise. Most men and women do not know what it is to perspire freely. This relieves the kidneys and sets into operation a normal organism seldom used. Nothing is more health producing although this prescription should be used with caution, the client to be referred to a gymnasium, tennis court, or other establishment, for this purpose, but not without previous investigation.

The Saturday afternoon.—For the indoor worker, nothing is more essential than to get out of doors into the space, where the human race was born and where it grew up. This requires a knowledge of surrounding country, and perhaps the organization of a hiking club. In one health clinic in New York city, the clients have been organized into regular hiking clubs, and the results are correspondingly excellent.

The Sunday holiday.—The same thing applies to the Sunday holiday. This opens a field of life construction in which there are at present practically no instructors. The physician who has health clients is the nearest instructor at hand and will find a great reward in fulfilling his duty.

Program.—In the all around program of exercise, there will be found both exercises which are formal in character—definitely prescribed for definite results—and the informal exercises of the game and athletic type. The latter, while more interesting and attractive, can never be made fully to give the practical corrective service that properly selected definite exercise can render.

SUMMARY OF THE COURSE ON PRECLINICAL MEDICINE

There have been presented in this symposium a series of addresses on the preclinical signs of disease in various fields of medicine. In no case has any speaker assumed to exhaust his field. In fact, they have frankly admitted the tremendous scope of the subject. The most important service that has been rendered is in calling the attention of the medical profession to the fact that there are a series of diseases, disabilities and forms of deterioration which only attack the middle aged and invariably have their effect on every one in later years, and lead to death. A study of preclinical medicine has already revealed the fact that a large number of these diseases—perhaps properly called incurable—can be either prevented or postponed. If this is the case, as it will increasingly appear to be from signs already apparent, we have a field of activity which will lengthen the average life, not many years, but many decades. It will put into the category of preventable diseases not only malaria, smallpox, diphtheria and tuberculosis, but nephritis, high blood pressure, myocarditis and diabetes. This result is to be accomplished best by scientific research into the preclinical signs of these diseases, which foreshadow them by a decade or more; secondly, by ascertaining with great completeness what methods can be used to obstruct their approach; and third, by convincing the public at large that they should obtain a health examination and a health service at the hands of a competent consultant. Fourth, and last, so to educate the medical profession that they shall be able to seize upon preclinical signs and successfully combat them. In addition to this, there is much and important service to be rendered to humanity in developing a mediocre physical equipment into a superior human being.

571 Park Avenue.

Evulsion of Hair as Experienced in Damascus

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Recently, while in Damascus, I had an unusual experience at the hands of a barber. After shaving he took a thin strong thread, and while holding one end between the teeth and the other with the fingers threw a loop in the middle of the thread. The loop was held apart on the fingers of the left hand, and was twisted so that it formed three or four turns on the length of the thread. By distending the fingers in the loop, and by pulling on the ends of the thread, he made the turns revolve rapidly, and in some way he managed to keep these rapidly revolving turns pressed against the face with one of his fingers. The hairs became implicated in the turns and were ripped out or broken. It must have required practice and dexterity to perform the operation, but there was no doubt of the result. He first performed this little operation in the hollow of the right earshell, causing both a surprise and a pain, a ripping sort of pain unlike anything I had hitherto felt, but by no means so stinging as in ordinary evulsion of the hair. After finishing with this ear he went over the right malar prominence, and by this time I was tired of the experience. On inquiry I was told that it was done as an extra fine touch, making the cheeks look cleaner than with a shave.

After shaving, the cut ends of the coarse hairs often show; if black, as black dots, or if gray, at first as dots of crystal, as mentioned by Henri Barbusse, and as they emerge further they give a frosty appearance, and in any case interfere with the velvety softness of the skin. Therefore a deep elimination of the hair, such as I suffered, is of course more thoroughly, more enduringly beautiful than the best shave.

Evulsion of the hair by tweezers has been practised from the earliest times, and in races with sparse beards, as, for example, the Chinese and the American Indian, it is practicable. With those races, however, which are bearded like a Skye terrier, it is another story.

Lummis speaks of the pair of golden tweezers, "the razor of antiquity," found hung by a cord about the neck of the mummies near Lima, and with which instrument to this day many of the aborigines of South America pluck out the scanty hairs by the roots, one by one (1).

Modern shaving in a reclining chair with marvellous soaps, hot water, towels, and a keen edged razor is a luxury, but Rosita Forbes in her journey in the Sahara mentions the case of an Arab, preparing to enter a desert town, being shaved by a comrade with a Gillette blade held in a pair of nippers. We are accustomed to think of the Romans as being luxurious, but I never see a line of Roman busts of senators and emperors with their smooth, dewlapped, atonic jowls without thinking of the broken glass said to be so frequently used by them to clear off an offending beard.

At no time throughout quite an extensive recent journey in Europe, in Egypt and in the Near East did I have the pleasure of reclining in an American barber's chair. Some of the barbers admitted having seen such chairs in the movies but did not have the money or enterprise to purchase one. As for the hot towels, those also were absent. As a lame substitute they subjected their victims to a prolonged use of the shaving brush, according to the old Scotch proverb, "Weel sapid (soaped) is half shav-ed," and in one instance in Budapest a superannuated barber was employed solely for this purpose, a strange preparation in the decline of life for entrance into the world where all the male celebrities are represented as being heavily bearded.

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323 Geary Street.

Instruments, Apparatus, and Clinical Notes

Treatment of Fractures of the Long Bones of the Lower Extremity

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Traction by weight in treating fractures of the long bones of the lower extremity, particularly the femur, has been employed for many years. Of its necessity there should be no doubt, although there are still surgeons who rely upon a plaster of Paris circular splint, applied under manual extension, or extension on a Hawley or Albee table or with some similar mechanical aid. A method of this type cannot give satisfactory results in the majority of cases, as displacement of the fractured surfaces usually occurs beneath the plaster, followed by overriding and shortening, no matter how skillfully the plaster splint is applied.

Up to recent years traction by weight, while showing far better results than the plaster splint method, has not been entirely satisfactory owing to the fact that traction has been exerted through the use of adhesive or mole skin plaster applied in the form of strips to the skin. To the ends of the plaster strips, traction is made by weight and pulley or by attachment to the end of a Thomas splint. This socalled skin traction has required frequent changing on account of detachment of the adhesive plaster from the skin, from the constant pulling. Furthermore, irritation of the skin and even ulceration very frequently result especially in hot weather. Even when the skin traction is well borne the amount of traction on the lower fragment is usually not sufficient to overcome completely the overriding and shortening. Some shortening, usually not less than one half an inch or more, has been the rule in fractures of the femur treated by skin traction. End to end approximation of the fragments has in my experience practically never been attained.

Good functional results are not uncommon in spite of the shortening, but in many cases the patient has to wear a thicker sole to compensate for the diminished length of the injured limb. The ideal anatomical reduction, viz., end to end approximation, has been attained by open operation and for this reason some surgeons recommend this in place of the closed method. The danger of infection, however, associated with this method, especially in the hands of those inexperienced in the technic of bone surgery, makes this an undesirable routine procedure. It is only in very exceptional cases that it is indicated.

Since the advent a few years ago of skeletal traction in place of skin traction, much better anatomical reduction has been attained. The original Steinman nail which was driven transversely through the condyles of the femur above the joint, was not satisfactory on account of the danger of infection from the presence of a foreign body in the cancellous tissue. The introduction of the calipers has largely obviated this danger and hence they are much to be preferred. The sharp ends of this ice tong shaped instrument are inserted through small incisions in the skin and driven by a mallet into the cortex of the femur just above the condyles and direct traction is thus made possible on the lower fragment. If sufficient weight is applied the fragments can not only be brought end to end but they can be drawn apart leaving a gap between. It is well to use a heavy weight at the outset for traction and then gradually diminish it in accordance with the progress of the case. This requires the use of a portable x ray apparatus, to check up the position of the fragments. A gap between the fragments means that the weight must be materially reduced.

Any lateral or anteroposterior displacement of the fragments can be corrected by lateral traction, a coaptation splint, or by a small sand bag placed over the projecting fragment. These cases require constant supervision and adjustment, but the excellence of the anatomical results obtained repays the time expended.

If for some reason such as open wound or abrasion it is not advisable to insert the calipers into the lower end of the femur, they may be introduced into the maleoli or the sides of the os calcis. Definite contraindications to the use of calipers in the femur are:

1. A fracture of the lower end of the shaft with one or more fissures involving the condyle and knee joint. There is danger here of infection of the joint with resulting ankylosis, amputation or death from sepsis. All of these consequences have occurred to my knowledge.

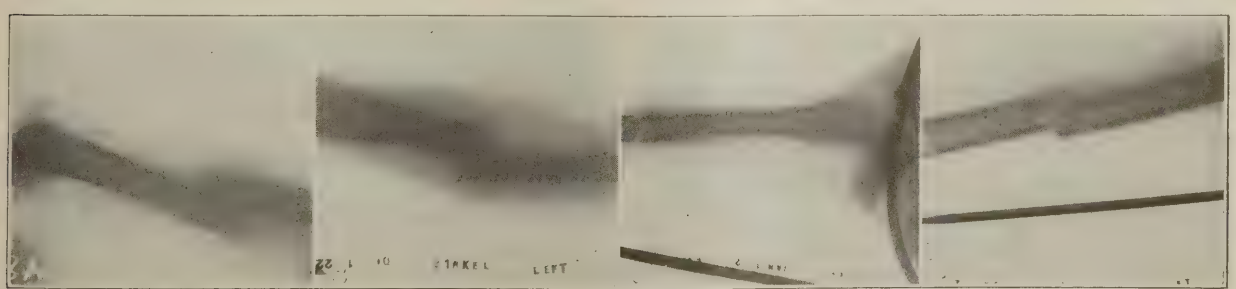

FIG. 1.—Case I. Fracture at middle of shaft of femur. A—Lateral view; note the marked overriding. B—Anteroposterior view; note the lateral displacement. C—Anteroposterior view (after insertion of calipers); the overriding and lateral displacement have been corrected. D—Lateral view; note the absence of any shortening.

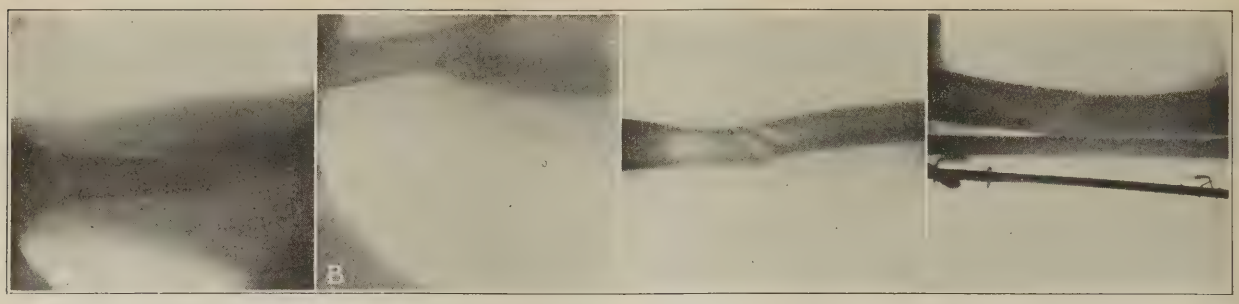

Fig. 2.—Case II. Fracture of femur at junction of middle and upper third. A—Anteroposterior view; note the marked overriding. B—Lateral view; note the angulation and overriding. C—Anteroposterior view; after application of calipers. D—Lateral view.

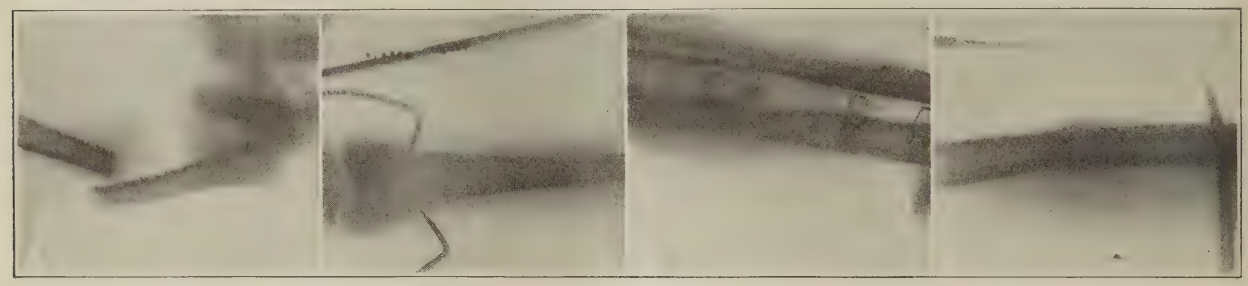

Fig. 3.—Case III. Fracture of middle of shaft of femur and dislocation of hip. A—Anterior view; note marked overriding and angulation; also dislocation of head of femur. B—Anterior view; note corrected position and calipers in proper position. C—Lateral view; note slight separation of ends of fragments. D—Anterior view. The dislocation was reduced before application of the calipers.

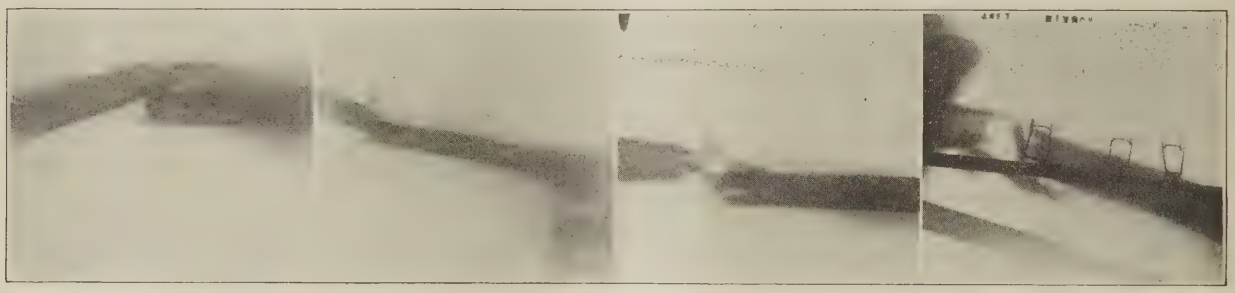

Fig. 4.—Case IV. Fracture of shaft of femur at junction of middle and lower third. A—Lateral view; note overriding. B—Anterior view; note angulation. C—Lateral view; after insertion of calipers; note wide separation of ends of fragments. D—Anterior view; note correction of angulation.

Fig. 6.—Case VI. Fracture of middle of shaft of femur. A—Lateral view; after application of skin traction. B—Anterior view; after application of skin traction. C—Lateral view; after substitution of caliper traction for skin traction. D—Anterior view; with caliper traction.

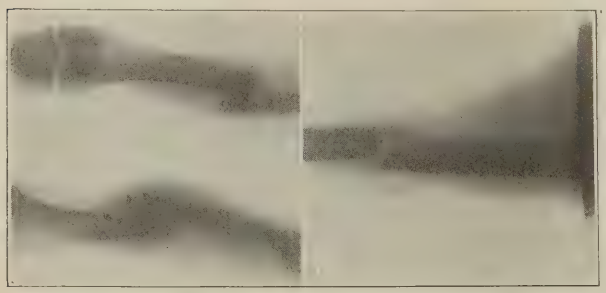

Fig. 5.—Case V. Fracture of middle of shaft of femur. A—Anterior and lateral views; note extreme overriding. B—Anterior view; after insertion of calipers; note slight separation of ends of fragments.

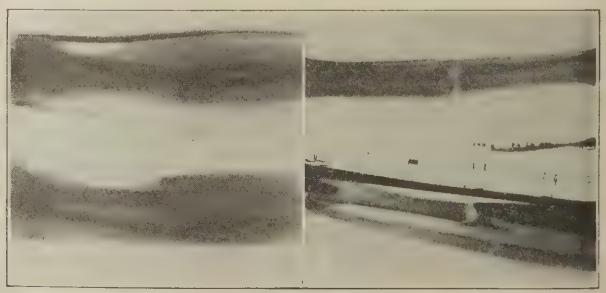

Fig. 7.—Case VII. Fracture of tibia and fibula. A—After application of plaster of Paris cast; note the marked overriding. B—After substitution of caliper traction at the maleoli, for the plaster cast; note correction of the overriding.

2. An external wound or abrasion at or near the point of insertion of the calipers. Infection of the wound may contaminate the caliper wound resulting in cellulitis and even osteomyelitis.

Should infection appear in the caliper wounds, the calipers should be removed immediately. They can then be inserted at some other point such as the malleoli or sides of the os calcis.

Thus far we have had in mind the recent cases of fracture in which the ends of the fragments are freely movable. Caliper traction is also very valuable in cases of one or more weeks' standing when callus formation has already begun, and when considerable effort is necessary to make the fragments freely movable on one another and when there is considerable contraction of the soft parts. Under these conditions the calipers can bring the lower fragments to a level with the upper and overcome a shortening and deformity which threatened a bad result and a possible open operation. In this way the indications for open reduction have been still further restricted. It is necessary before inserting the calipers to thoroughly mobilize the ends of the fragments under the general anesthetic. A heavier weight than is usual in recent cases should be applied at once.

There are some points in technic which are of importance for the successful use of the calipers. In the first place the insertion of calipers should be regarded as a major operation, and the same aseptic precautions carried out as for any operation involving bone. I am opposed to the custom of some surgeons of inserting these with the patient in bed in a ward where asepsis cannot be so complete as in an operating room. The skin should be prepared by shaving and application of a soap poultice the night before. Before making the two short lateral incisions just above the condyles, the skin should be drawn up with the left hand so that the cuts retract downward on release of the hand. In this way the lower angle of the incision is not pulled upon by the calipers causing pain. The sharp ends of the calipers are driven through the cortex of the shaft by a mallet just above the condyles. The lower extremity is then suspended from a Balkan frame on a Thomas splint and the necessary amount of weight usually about twenty-five pounds, attached to a cord running from the calipers over a pulley at the end of the bed. A portable x ray picture is taken at once and any necessary correction then made in the amount of extension or abduction. The apparatus should be frequently inspected and other x ray pictures taken from time to time.

It will be necessary to keep the calipers in about four weeks. If they are not well borne beyond this time they can be removed and skin traction with a small weight substituted until the union has become solid.

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Device for Making the Bucky Diaphragm Comfortable

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The type of Bucky diaphragm which stands, a sharp edged block, on the röntgen ray table, often causes discomfort or even pain to patients. In the usual röntgen ray laboratory pillows are used against this discomfort, and it is true that they do help somewhat to level the surface on which the patient lies. However, pillows have a habit of bulging and depressing, and of getting out of place and in the way, so that they are a matter of great annoyance. Besides, they rarely save the patient from at least some contact with the sharp edges of the diaphragm.

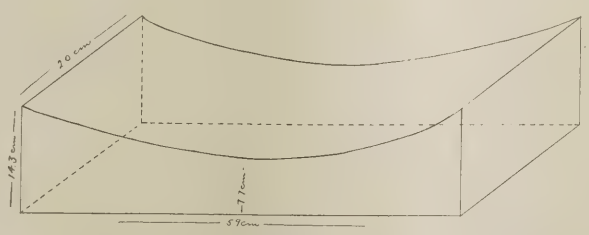

Fig. 1.—Author's device for making Bucky diaphragm comfortable.

I had to cope with a Brady Potter Bucky diaphragm. I devised the following simple arrangement for the comfort and relief of patients. I had the hospital carpenter construct six hollow wooden blocks, each fifty-nine cm. by twenty cm. by fourteen and three tenths cm. The length of each block corresponds with the width of the diaphragm; the height at either end of each block corresponds with the height at either end of the diaphragm; and the width of one block added to that of the five other blocks and to the length of the diaphragm make up the entire length of the röntgen ray table. The upper surface of each block is concave to correspond with the concavity of the diaphragm, making the height of the block at the centre of the concave surface seven and seven tenths cm. The blocks are covered with felt.

These blocks placed at either the head or the foot of the röntgen ray table fit next to the diaphragm and thus give an uninterrupted, even surrface on which the patient may lie. If the diaphragm is placed in the middle of röntgen ray table, three blocks should be placed at the head and three at the foot. If the diaphragm is moved towards the head end of the röntgen ray table, one or two blocks, or perhaps none, should be used at the head end, and the rest of the blocks at the foot end. Thus the diaphragm may be moved freely, a shorter or longer distance, as it may seem necessary, always maintaining a smooth uninterrupted surface on which the patient may lie.

Experience has shown that the width of the blocks as given, twenty cm., is convenient and practical, narrower ones being unnecessary for the general purposes of röntgen ray work, while wider ones might

sometimes be inconvenient or clumsy. However, slight variations of the dimensions of the blocks may be necessary in order to conform to the measurements of the röntgen ray table, and will not, of course, detract from their value of the blocks.

In the röntgen ray laboratory where I introduced these blocks, they have proved a boon, not only to patients, but to nurses and doctors as well; and they have made for orderliness which the old method of using pillows did not permit.

181 North Avenue.

The Indications and Technic for Removal of Excessive Subcutaneous Abdominal Fat.—Aime Paul Heineck (*Northwest Medicine,* June, 1925) asserts that, in properly selected cases, large masses of fat can be removed from flabby, sagging, fatty abdominal walls when the excessive fat deposit causes great annoyance and discomfort, determines manifest disability, constitutes a physical handicap, or becomes an unbearable social handicap. Resection of large masses of fat is also justifiable and serviceable in the obese to lessen the tendency to hernia; in operating for hernia in the obese; as an associated step in many abdominal operations; as a preliminary step in other abdominal operations, and in cases in which the careful fitting and wearing of orthopedic apparatus is not otherwise feasible. He also claims that the operation is simple of execution, quickly performed, and always devoid of immediate or remote danger to the patient. Yet he calls attention to the fact that fat is a tissue of low vitality, so that special care must be taken that there be little or no accumulation of serous or sanguineous fluid between the flaps.

Systematic Preoperative Vaccination with Delbet's Vaccines.—E. Blanco-Acevedo (*Bulletin de l'Académie de médicine,* May 19, 1925) reports good results from this procedure in preventing the postoperative flareups of infection in apparently uninfected tissue which sometimes gravely compromise the issue in otherwise promising cases. Embolism after simple operations and infection after metallic osteosynthesis exemplify such cases. The author has been carrying preoperative vaccination in all his cases for four years. The vaccine, prepared according to Delbet's published directions, is polyvalent and contains staphylococci, streptococci and pyocyaneus organisms. It often induces a rather marked constitutional reaction, with which its efficacy seems to be related. More constant results were obtained with this vaccine than with others. Three subcutaneous injections of two to four mils of vaccine at three day intervals are given, and three days are allowed between the last injection and the operation, except in case of emergency. Four groups of cases in which the procedure proved especially helpful are mentioned The first is that of apparently uninfected cases of simple uterine fibroma or small ovarian cysts; these cases are highly susceptible to the least superimposed infection. The second group is that of tumors of the cervix subjected to extensive hysterectomies of the Wertheim type. In these cases there is nearly always a more or less manifest infection of the parametrium; under the vaccine treatment the inflammatory manifestations subsided and the operative wound could regularly be closed without drainage. The third group is that of the cases treated by intrauterine applications of radium, which, as is well known, are often followed by pronounced septic disturbances. The fourth group comprises fifty cases of metallic osteosynthesis; of these, only one showed a local inflammatory reaction which necessitated reopening of the wound, and this case proved to have been the only one in the series in which, through an attendant's mistake, no preoperative vaccine had been given. The author's combined statistics include 389 cases of laparatomy receiving vaccine, without any deaths or complications with phlebitis or embolism. This series included 220 hysterectomies for salpingitis or fibroids; ten myomectomies; 114 conservative operations, salpingectomies or ovariectomies; thirty fixations of the uterus, and fifteen Wertheim operations. The appendix was removed at the same time in eighty-five per cent. of the cases.

Recent Improvements of Technic in the Surgery of the Spinal Cord.—R. Leriche (*Presse médicale,* May 30, 1925) deems the sitting posture introduced by de Martel an important improvement. At all levels of the cord, but especially in the cervical region, this posture, by almost completely eliminating venous bleeding, makes exposure of the spinal cord easy and facilitates intrameningeal manipulations and suture of the dura. Thanks to this position, the author was able to remove a growth at the level of the third, fourth and fifth cervical vertebræ in a very stout, shortnecked woman. Another improvement is the use of local anesthesia, preceded by morphine or some other narcotic. All spinal surgery can be carried out under this method; the patient does not suffer and can himself facilitate the operation. A third feature is subdural, extraarachnoid exploration of the cord and spinal roots. The author adopts this procedure regularly before opening the subarachnoid space. It is more easily carried out with the cord than in the brain, and permits of precise topographic study of the lesions, the spinal roots and tumors being in their normal relations. The operation causes less injury to the cord, with corresponding improvement in the prognosis as to life and function.

Clinical Observations on the Effect of Insulin.—Reginald Fitz (*Northwestern Medicine,* August, 1925) says that on the whole, our present knowledge in regard to the immediate effect of insulin upon the diabetic patient is fairly comprehensive. Insulin lowers the blood sugar concentration by increasing the rate of sugar consumption or storage in the body. Insulin acts as an alkali in diabetic acidosis by preventing the formation of acetone bodies and by thus liberating previously bound base. Insulin spares the breakdown of body protein. Insulin enables the diabetic patient with acidosis to hold back water and to become hydrated. For all these reasons insulin is of the greatest possible value in the practical management of diabetic cases. Whether insulin can cure diabetes is for the future to decide. For the time being we must take a conservative and somewhat skeptical point of view on this phase of the insulin problem and must wait for the reports of a large number of cases carefully followed for a far longer period of time than has thus far been possible.

Historical Medicine

Hints of Medical and Other Interests in the Odyssey

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Man has arrived at his high estate very largely through curiosity. It is a mighty faculty of the mind in the hidden springs of the evolution of man. Curiosity is the mainspring, observation depends on it. Memory and reason turn out the finished product. The stories of the sea were manufactured to feed the curiosity of dwellers by it and mariners on the Mediterranean told the stories of the Odyssey, which Homer put into his immortal poems. They owe their existence then to this fundamental factor of the human mind. This product of this factor has outlasted a thousand cities and ten thousand book markets. Millions of tales have been forgotten, but still the tricks Circe and Calypso played on Odysseus, the stroke Odysseus played on Polyphemus, run through the printed pages of every civilized land. Long after Homer's time, far into our own, men sit at feasts for the crumbs that drop from his table. To these are still invited from afar as honored guests (1a), "workers for the people—a prophet, a doctor, a shaper of spears or a pleasing minstrel." Even the swineherd Eumæus understood that and the doctor gladly returns to such feasts.

Five or six years ago I left Telemachus drinking a cocktail in the columns of this journal (2a), stirred by the fair hands of Helen of Troy, and such a cocktail! "She cast a drug into the wine whereof they drank—a drug to lull all pain and bring forgetfulness of every sorrow" (1b), and all but three thousand years later a poet in another land sang:

". . . . . vainly I had sought to borrow
From my books surcease of sorrow—
Sorrow for the lost Lenore.

and he cried to his soul:

"Quaff, oh quaff this kind nepenthe," and when we become old both our own and the blind poet of Chios sing to our souls. The *nepenthe* of the Homeric line appeals to us in that of Poe. What kind of drug was it? "Whoso should drink a draft thereof, when it is mingled in the bowl, on that day he would let no tear fall down his cheeks, not though his father and mother were dead, not though men slew his brother or dear son with the sword before his face and his own eyes beheld it. Medicine of such virtue and so helpful had the daughter of Zeus, which Polydamna, the wife of Thon had given her, a woman of Egypt, where the grain giver yields herbs in greatest plenty, many that are healing in the cup and many baneful" —but most are both—and the civilized nations of the earth, as I write, in council assembled, Christians by profession, are attempting to find a way to minister to the bane of primitive orientals for their own profit in the very drug Helen had from the oriental woman. Helen drank it herself to show it was void of evil, but we know better.

This, we can only take it, was a hint at opiates. If it was opiates Helen put in the drink for Telemachus, was it to make him forget his father of whom he was seeking news at the court of Helen's lord? She does not say so, but it seems rather queer to us westerners, unaccustomed to the taste of the orientals hitting the pipe with its hashish and opium gum. We see no reason why Helen wanted to hokus the drink of her departing guest, a favorite device for crimps to get their victims aboard a ship, in practise for centuries at Mediterranean and other sea ports. Whether Helen's stirrup cup for Telemachus contained opium or not we have clearer grounds for the belief that it is what Circe used in subduing the wolves and lions around her to house pets, "bad medicine she gave them," the poet says (1c) (Fig. 1). Though Circe dwelt in a house of polished stones and there are other indications all through the Odyssey of a civilization far advanced in some directions in Homer's day, though Helen in Lacedemon, despite the fact she was a lady with a past, was housed magnificently by Menelaus, who appears as a rather dull and vain rich fool, we find these ladies, both of doubtful virtue, dabbling in drugs. In it all we can not but think of the exaggeration around a new thing, the dazzling fame of a strange new drug or cureall which stirs poets to sing of it and the press to be full of it. We can imagine, until archeology or history tells us better, that as Homer wrote the dazzling fame of some somniferous drug called "moly" or something else was spreading around the shores and stealing through the islands of the eastern Mediterranean, for he was singing and wandering there, too. They are digging up pipes today in the palaces of the kings of Kish and I am fain to believe the fair Helen after flirting with many men had hit the pipe as well as looked long on the wine when it was red. Her end fancy pictures to us must have been a ghastly one, we who have memories of the morgue and the manhandled bodies of such charmers, pricked with needle points on every purple space which could be reached, a horrid sight at which every hardened man, like an

Fig. 1.—Circe and Odysseus (Flaxmann)

old hospital intern now grown older still, has a right to shudder—despite the poet's idea of her death—some one's lost Lenore. Helen has appealed to most readers as the heroine of the Iliad and it has seemed to me one reason for believing that Homer wrote the Odyssey later in life is that she is but a faded heroine in it. Age has had time to know the evanescence of beauty and charm and in old age as one looks back beauty and charm cluster most thickly about the sweet simplicity of some quite natural and ordinary maiden like Nausicaa and a rustic simpleton like Eumæus the swineherd. They would be quite out of place in the Iliad.

Just a line more and we read of the Nile land, where the poppies grow that yield the nepenthe. "There each man is a leech beyond all human kind, yea they are of the race of Paeon." In another essay (3) I have cited Herodotus alluding to the Libyan sheep bearing lambs with horns already sprouted at birth and more recently in the same journal I have pointed out that Homer, who lived, Herodotus says, just "four hundred years before him and no more" records the same thing. Homer is exclaiming in an exaggerated way, with poetic license, "there every man's a doctor." Here again Herodotus echoes Homer, minus the poet's license—there "all places abound in physicians" (4). Here it is Herodotus records, too, the specialization of Egyptian practice, lending further precision to what Homer had recorded four hundred years before. On many other occasions the evidence has been pointed out of the dependence of the medicine of the Greeks on that of the Egyptians before them. They in all likelihood had eye doctors and throat doctors and gynecologists before Homer was born in Chios or Smyrna and all Homer's world knew of it up through Syria and Palestine as far as Troy. Here we find much later the Greek poet and still later the Greek historian recording it a thousand years after the Shepherd Kings had entered Palestine and conquered Egypt. Asiatics, they seem to have been, from the south, and the Greeks we flatter ourselves were at that time being formed out of northern blood from beyond the Danube. It may have been that the northern torrent met the southern tide of immigrants then along the fertile shores of what was later to be ruled by Ionian cities, until the Persians came. Old Egypt was crumbling even then. She handed on to the Greeks her medical lore and the Hippocratic writings furnish abundant internal evidence of her influence.

It is somewhat conjectural, no doubt, but we may be permitted to believe that the Polydamna, wife of Thon, Homer speaks of in the Odyssey, was the wife of Thoth—of him who now in our Egyptology figures as the Egyptian Hippocrates or Æsculapius. Homer in the Odyssey in his exaggeration that all the Egyptians were physicians but gives voice to the semi-civilized people who think all dwellers in a highly civilized land are wise men and all wise men are physicians necessarily, for that is the contact of ignorance with science. Just as the press or the poets have led or have expressed the views of impoverished Europe that all Americans are rich, so Homer exclaims: "All Egyptians are physicians." Now the gods of Greece being all powerful and omniscient must know the medical art. We can not deny the logic of this sequence of priestly vauntings and this was the sentiment behind some of the early critics of Homer who blamed him for blesphemy, where he makes Odysseus cry out he wished to God he could send Polyphemus to Hell, bereft of soul and life as well as of his only eye (1d), but at least not even his father Poseidon can cure his eye, thank God. A very natural expression of sentiment, I am sure, for one who, standing among his trembling friends, had seen the giant (Fig. 2)

"Seize, crush and devour a brace of the Greeks
As a Welshman would swallow a couple of leeks."

Fig. 2.—Odysseus inebriating Polyphemus (Flaxmann)

If a man were permitted to blaspheme at all while "poking a spar in his forward light," it certainly was on such an occasion as the adventure of Odysseus and his companions with the Cyclops, when he so narrowly himself escaped the cannibal. But as has been said the innumerable commentators of Homer have had, among the early ones, those who blamed him for representing Poseidon as possessing no medical or surgical skill (5), but Homer found defenders who declared that while a number of the gods, Phoebus and Paeon among them, were skilled in the healing art, Poseidon, spending so much time at sea, I suppose, was not. Antisthenes and Aristotle, it seems, both advanced this excuse for Homer.

Somewhere, in some commentary on Galen, in these columns perhaps, I have alluded to the belief of ancient physicians that olive oil was good for the skin and bad for the stomach. Nowadays in our northern climes we love to smear the mayonnaise over our shrimp and chicken salads to grease the stomach and we refuse to clog our skin pores with unguents. The ladies of course put it on their lips to draw kisses, but elsewhere unctions are much out of style, entirely so in society, I think, and much so in medicine, but not so in Homeric days:

"All too long has my skin needed anointing," says Odysseus (1e) when the servants of Alkinous gave him oil for his brawny shoulders which had for days buffeted the salt waves as he swam through the breakers around Phaeakia. So what we find in Galen we find in Homer, too. His idea was the skin needed it. He was a southerner and the blazing sun on the bare body kept the olive oil from being like tallow there. The Africans and others naked in the tropics still use it on the skin and sweat it out and I have no doubt in hot lands it serves a better purpose there than it does on the gastric mucosa.

(*Continued on page* 685)

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Radiotherapy at Low and Moderate Voltages*

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The expression deep therapy has obtained such widespread currency that one would almost be led to consider it a permanent addition to our professional language. And yet, to specialists in radiology it carries no meaning, because any form of radiotherapy is more or less deep, according to the spectral composition of the rays employed. As generally used the term deep therapy is supposed to mean high voltage röntgen ray treatment, but as a synonym it is a rank misnomer. Many physicians say deep therapy when they do not mean high voltage röntgen ray treatment, and much unnecessary confusion is thus engendered.

A few years ago when high voltage röntgenotherapy came into use, many radiologists thoughtlessly concluded that a new era had been reached, and that this new idea in röntgen ray treatment was a heaven sent, automatic and certain way of curing all human ailments. Consequently there was a stampede for high voltage apparatus, and manufacturers were kept blissfully busy. Less powerful machines were discarded in the mad rush for the latest thing, and in a short time the new mills were grinding their gory grist. Every form of disease was subjected to high voltage röntgen rays. Socalled deep therapy became the symbol of a new army of standardized radiological crusaders. Thought and common sense seemed to have disappeared with the discarded equipment.

Since then the force of inexorable realities has had a decidedly sobering effect on many radiologists, but others are still far from home and apparently unable to obtain their bearings. I do not wish to decry the use of the short wave length röntgen rays generated at the higher voltages. On the contrary, they have proved most useful in dealing with pathological conditions with which we had been quite powerless to cope heretofore. Tumors that formerly were uninfluenced by röntgen rays produced at lower voltage became more or less susceptible to treatment with short wave length röntgen rays. But if this is admittedly true, it is likewise true that conditions readily amenable to long or moderate wave length rays have not shown a like susceptibility to rays of short wave length. For instance, many diseases of the skin easily curable by röntgen rays of relatively long wave length do not respond to rays of short wave length. Many of us have failed to understand that, like any other form of treatment, röntgen ray treatment must be adapted in quality as well as in quantity to the effect desired, and that, according as we are dealing with a condition at the surface or at varying depths beneath it, we must select the portion of the röntgen ray spectrum which will be absorbed most completely at that level. For it is well known, though imperfectly understood, that only those rays that are absorbed by the cells produce cellular alterations. Unabsorbed rays are quite inert, so far as any effect on tissue is concerned.

During the last five years many radiologists have equipped themselves with high voltage röntgen ray generators. This step was a perfectly rational one, but instead of reserving short wave length ray treatment for suitable cases, many committed the blunder of subjecting to such treatment every form of disease supposedly amenable to röntgenological treatment, regardless of its nature and location. My opinion that this is not sound radiotherapy is partly confirmed by the published reports of a few radiologists who have been too honest to deceive themselves.

There are great differences in the many pathological conditions susceptible to röntgen ray treatment. These differences may be based on the relative depth of the lesions or on their very nature, and correct treatment must be adapted to the conditions obtaining in each case. To attempt to treat a case of ringworm of the scalp in the same way and with the same dose as a case of cancer of the uterine cervix is not scientific radiotherapy; it is pure empiricism and smacks of quackery. The tendency toward standardization has been carried too far. The effort to standardize generating apparatus and methods of measuring doses is highly commendable and should be encouraged by every possible means; but in treating disease it must be borne in mind that the body and its pathological disturbances are not and can never be standardized. It is just as wrong to treat epithelioma of the skin and carcinoma of the bladder with the same dose of röntgen rays as it would be to treat all cases of

*Read before the Chicago Röntgen Society, October 9, 1925, Chicago. Section on Röntgen Therapy, Mayo Clinic.

malaria with the same dose of quinine. The results in either case are not likely to be the best. Belot has recently said, "There can exist, in principle, as many different radiotherapies as there are wave lengths in the x ray spectrum." However, for practical purposes, radiotherapy may be applied at low voltage, at moderate voltage, or at high voltage, thus making possible the use of different proportions of the röntgen ray spectrum so as to take full advantage of the selective absorption of cells. Low voltage is between fifty and one hundred peak kilovolts; moderate voltage, between one hundred and one hundred and fifty peak kilovolts, and high voltage, between one hundred and fifty and two hundred peak kilovolts or more. Of course this is an arbitrary classification and subject to such future modification as therapeutic application and development may require.

In the treatment of diseases of the skin röntgen rays generated at approximately eighty peak kilovolts are generally the most useful. Filtration may or may not be used, depending on the degree of thickening of the lesions. Since it is the aim to have the skin itself absorb the greatest possible amount of the rays, unfiltered rays are usually preferable. This applies to benign as well as to malignant disease, the only difference being in the dose, which must be varied according to circumstances. Thus, in an ordinary case of acne vulgaris, rays generated at eighty peak kilovolts are generally used, and either 0.25 skin unit weekly or 0.5 unit every ten days or two weeks is given. However, if the lesions are notably indurated it is sometimes desirable to increase the voltage to one hundred peak kilovolts, and to employ one millimetre aluminum filter. In ringworm of the scalp in which the aim is to bring about a uniform temporary epilation, 1.25 skin units of unfiltered rays at eighty peak kilovolts are very effective. In dealing with more resistant lesions, such as warts, callosities, and keratosis, rays of the same quality are employed, but the dose is increased to from two to four skin units. The same is true of basal cell epitheliomas unless the thickness of the lesion and the accompanying induration make it necessary to increase the dose still more, or to employ some filtration plus an increase in dose.

Great care must be exercised in dealing with diseases of the skin. Treatment requires experience and thorough knowledge of the capacities and limitations of one's apparatus, as well as accurate methods of measuring the different elements that enter into the dosage. Two chief methods of measuring doses are in use: one largely employed by European radiologists, and the other more commonly employed in the United States. In the first method small discs or pastilles of barium platinocyanide are used. Röntgen rays cause these pastilles to change color; the change in color can be compared to a standard furnished with the pastille outfit, and the dose be thus determined. The method requires much practice and experience to make one sufficiently expert and accurate. It has the disadvantage of bringing in a considerable personal variation in reading the changes in color.

The second method does not require a special apparatus, but it does require test exposures on the skin of human beings under carefully controlled electrical conditions. From such tests a standard skin unit is established, after which it becomes merely a simple arithmetical problem to calculate any dose required.

Pathological disturbances well below the skin or even deep in the body respond well to rays generated at a voltage below one hundred peak kilovolts: enlargement of the thymus in infancy, for instance, and simple lymphatic hyperplasia. It is well known how responsive the tissues and organs in early life are to slight stimuli. As little radiation should be used as experience shows to be necessary to obtain the result sought. If röntgen rays produced at eighty or one hundred peak kilovolts are sufficient to cause a satisfactory regression of a markedly enlarged thymus, more penetrating rays should not be used at the risk of causing undesirable changes in other structures. The dose, likewise, should be kept to the necessary minimum. Unnecessary saturation of the organism with röntgen rays is no more desirable than to inject into it a quantity of any foreign substance beyond the minimal amount required for a specific purpose.

MODERATE VOLTAGE

Certain disease conditions underlying the skin, such as manifestations in the lymph nodes of simple inflammation, tuberculosis, and lymphoblastoma, and certain malignant neoplasms, such as malignant testicular embryoma, require röntgen rays of somewhat greater penetration. For these conditions treatment at moderate voltage is used, because it is necessary to employ rays that will be absorbed, not so much in the skin but in the underlying structures affected. This requires the use, not only of higher voltage, but of a certain degree of filtration to eliminate from the röntgen ray beam as much as possible of the long wave length rays which would only serve to interfere by their unnecessary action on the skin.

ILLUSTRATIVE CASE

CASE.—A man, aged forty-nine, registered at the Clinic February 18, 1925, complaining of weakness and pain in the left thigh of five months' duration. Seven years previously the lymph nodes of his neck and groins had become swollen. Under röntgen ray treatment this adenopathy had subsided but every few months thereafter the nodes had again enlarged, and he had been forced to submit to röntgen ray treatment repeatedly. Three years previously he had noted a small swelling just above the left elbow; this had gradually increased in size during the following year but had not affected his general health. Indeed, he was well enough to play through an important series of tennis matches. In July, 1924, he began to lose strength, became pale, and was distressed with pain in the lower third of the left thigh, which gradually swelled. He undertook the heroic measure of fasting for twenty-three days and lost twenty-five pounds. Subsequently he regained a few pounds but continued to lose strength, and the pain in the thigh did not abate. In August, 1924, röntgen ray treatment of the left thigh brought some relief and the swelling partly subsided. However, at about this time a gradually increasing dyspnea supervened.

On examination moderate bilateral adenopathy of the cervical, axillary and inguinal nodes was found. There was also extensive retroperitoneal and mediastinal adenopathy, with hydrothorax filling the right pleural cavity almost completely. In the left arm were two tumors pressing on and distorting the

bone. Röntgenograms of the lower third of the left femur showed an apparent destructive process, probably atrophic in origin, from the pressure of a tumor which previous röntgen ray treatment had caused to melt away. March 5, 1925, a node from the left supraclavicular region examined microscopically revealed lymphosarcoma. The patient was extremely ill and for a time it was doubtful if anything could be done for him. However, March 11th, after the aspiration of two thousand seven hundred c. c. of fluid from the right pleural cavity, the dyspnea was considerably relieved. An extensive course of röntgen ray treatment was then given, but it was divided over a period of ten days so as to minimize the tendency toward systemic reaction. To have attempted high voltage treatment under the circumstances might have been fatal. Consequently the first course of röntgenotherapy was given under the following technical conditions: voltage 135 peak kilovolts measured by the sphere-gap method, F. S. D. sixteen inches, and filtration either four or six mm. of aluminium. The areas treated with four mm. aluminium filtration received five ma. for twenty minutes, while those treated with six mm. aluminium received five ma. for thirty-five minutes. The treatment was directed to both sides of the neck, axillæ, both groins, the left arm, the mediastinum, the abdomen and the left thigh. Crossfiring was employed wherever feasible.

Almost from the start of the treatment the patient's condition began to improve. The remaining fluid in the right pleural cavity was absorbed spontaneously. The adenopathy everywhere diminished and he began to gain in weight and strength. When he was examined April 15th the swelling of the lymph nodes had largely disappeared or had become much reduced. The large mass of retroperitoneal lymph nodes which had been palpable previously could no longer be felt. The pain in the left thigh also had vanished. Between April 16th and 21st the patient was given a second course of röntgen ray treatment, similar in most respects to that given in March; it varied in two particulars only: an additional field over the frontal region of the head was treated, because two small subcutaneous nodules had appeared in the upper forehead and scalp, and the abdomen was not treated, in order to cause as little systemic reaction as possible and to encourage further gain in weight and strength. Following this second course of treatment improvement was rapid. When he was seen May 20th he had gained ten pounds more. There was very little trace of the previously recorded adenopathy. Infection of the middle ear on both sides had caused a temporary slump in improvement but he had been able to throw this off and was again on the mend. He received a third course of röntgen ray treatment between May 23rd and June 4th and shortly afterwards started for London greatly improved.

I do not wish to imply that all cases of the diseases mentioned should be invariably treated at moderate voltage, because, besides the purely technical factors of the problem, other factors must be constantly taken into the equation, chiefly the condition of the patient and his ability to tolerate the therapeutic measures proposed. In the case cited I have stated the reasons which influenced me in arranging the treatment as described. In other cases it may become advisable to combine röntgen rays of different quality (different voltage and different filtration), certain regions being treated at moderate voltage, and others at high voltage.

HIGH VOLTAGE

In the treatment of the more resistant forms of neoplasm, especially carcinoma and sarcoma, the most important single item to consider, aside from the condition of the patient, is the factor of absorption. Long and depressing experience has taught that röntgen rays generated at low or moderate voltage are of little avail for large voluminous tumors at or near the surface; this is still more true of such tumors deep within the trunk. Indeed, too often such new growths prove quite resistant to röntgen rays, regardless of their quality. However, in those of a relative degree of susceptibility, we must employ rays of as short a wave length as possible, by increasing both voltage and filtration. The object in such cases is to bring about the maximal absorption of röntgen rays by the tumor cells; this is accomplished by raising the voltage to the highest possible limit, thereby increasing the proportion of short wave length rays in the total beam, and by filtering the rays through metals of high atomic weight, thereby eliminating from the beam the long wave length rays which would only serve to block our efforts by their dissipated influence on the skin and superficial tissues. Important as is this fundamental principle, sound practice often requires its modification to suit special circumstances. For instance, if the tumor is relatively young, the general condition of the patient good, and the prospect of a permanent cure is reasonable, we are entirely justified in applying the principle with the utmost thoroughness. On the contrary, if the tumor is extensive, the general health of its victim seriously undermined, and the most we can hope for is to check the unfortunate course of events for a time, the idea of high voltage röntgen ray treatment may have to be given up and more modest measures instituted.

In certain varieties of disease röntgen rays are known to have a definite, though temporary effect which tends to diminish as time and the frequency of treatment increases. In spite of this well known tendency, it has been the practice of some radiologists to treat such cases from the start with high voltage röntgen rays, with the inevitable consequence that, once the effectiveness of these rays has been exhausted, further attempts at treatment have been fruitless. It is much better, therefore, to begin the treatment of such diseases as leucemia with low voltage röntgen rays. As the spleen, lymph nodes and bone marrow become more tolerant of the rays and respond less and less to their influence, the voltage and filtration can be progressively increased. Effective treatment can thus be carried on for a much longer period.

In cases of fibromyoma of the uterus, treatment at high voltage is preferable, because one course, consisting of two fields, each receiving a three-quarter dose at two hundred peak kilovolts, will accomplish in two days as much as from three to six courses of treatment at moderate voltage, covering a period of several months.

Within the narrow limits of this paper I could not touch on the detailed application of this idea, but I have tried to give you enough to induce some of you

to reconsider the situation. I cannot emphasize strongly enough the point that radiotherapy means the therapeutic application of all radiations. The radiosensitiveness of living cells and the laws governing the absorption of röntgen rays by the cells are the two most fundamental considerations in radiotherapy. Therefore, instead of confusing the problem by idle speculation concerning possible factors the actual existence of which is doubtful, it would be far more profitable to our patients and to ourselve if we stressed rather the sound application of wel established principles. We must learn to select fo the treatment of each case that portion of the spec trum corresponding most nearly in absorption char acteristics to the level below the surface at whic the diseased structures are situated. Let us be full fledged radiologists and not merely radiologica mechanicians.

Medical and Surgical Diathermy

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Recent medical and surgical literature contains many articles dealing with a new field in which American physicians have been leaders.

Men of international repute as surgeons using accepted methods, who have applied the knife to thousands of patients in past years, have become very enthusiastic regarding the future of a new surgery as it will be practised without the scalpel. This refers to a practically bloodless division of tissues by the electrical knife. The prospect of a knifeless operating room must, in addition, especially appeal to patients who had hitherto hesitated to undergo operations. The terror that formerly gripped the sufferer when the surgeon proposed an operation has shifted within the past decade, from the fear of the anesthetic to the fear of the knife. Now even this dread will have vanished with more general adoption of the newer electric method.

The opportunity for marked advances in surgery is brightened accordingly. The surgeon who in the past had been forced to hesitate or to refuse to perform an otherwise necessary operation because of the likelihood of meeting with uncontrollable bleeding, will henceforth find no cause for delay by using the electrical acusector. Use of the new surgical diathermy gives him an agent which in the hands of an experienced operator makes excessive bleeding practically impossible. The age of bloodless surgery has thus been brought relatively nearer.

Thus, surgical diathermy is utilized as a substitute for the knife and yet applied in such a way as to make an incision which rivals that of the most adept surgeon with the sharpest of keen blades. The depth of the electrical cut may be judged to a nicety as no pressure whatever is necessary. The tissue under the surgeon's eye practically opens as if at the command of "open sesame" of *Ali Baba and the Forty Thieves*. In practice the applicator need not actually touch the skin, for example, as the needles are poised over the desired spot; then the high frequency current in the human tissues rushes to meet the suspended needle, splitting the tissue instantly, cleanly. All surgical procedures in cavities that formerly required the steel scalpel may now be performed by the electric energy in this new method.

Surgical diathermy implies far more than merely the one use—just explained. The skilled operator, with electric energy thus applied to surgery, may coagulate the tissues; thus he is able to remove unsightly blemishes and other superficial growths o either a benign or a malignant nature. Such tissue which the surgeon treats in this manner become powdery mass which can be readily wiped away with out bleeding. The involved areas heal without per ceptible scarring. The structures underlying th field operated upon by this new method remain ster ile, as germs cannot find a safe lodgment there.

Dr. Howard A. Kelly, writing in the MEDICA JOURNAL AND RECORD on the new surgery, say of this use of diathermy: "I therefore welcome thi new method of coagulation as a great addendum t our technic, not only enabling us to do some thing better, but also greatly enlarging our field of benefi cial activity."

Other modes of application of diathermy aid i various medical diseases; among these pneumonia rheumatism (socalled), arthritides, and indeed man affections which had previously been resistant t medicine by mouth.

With the high frequency apparatus, other mode of application of medical electricity are possible. Th spark from the Oudin current is invaluable in cer tain diseases, and its use with vacuum tubes has useful vogue.

In this connection one should add that the use b laymen of toy outfits sold without doctor's prescrip tions to the unwary may involve serious risk. Ofte a selftreated person may delay too long with such vaunted cureall, and when at length he or she doe consult a physician, the condition which earlier migh easily have been remedied by proper treatment ha advanced too far for eradication, so that only pallia tive measures are now of use. Incidentally, the mod ern trend is away from this wrong tendency, a annual or semiannual periodical health examination disclose future diseased conditions in the incipien stage. Serious maladies or dangerous sequelæ t what are at first only mild diseases are thus nippe in the bud, so to speak.

We must not wander too far afield, though. Dia thermy, medical or surgical, has come to stay. Rea what Dr. Kelly has said:". . . we have here a re markably startling invention and innovation, fo probably the last thing any one ever anticipated wa that the time honored scalpel, badge of our office a surgeons, as it were, would ever find a successfu rival. How unsafe it is to prophesy." Further o he added: "Those methods are not to be learned com

pletely in a week or a year. They call for a careful attention to a new technic, for discriminating judgment in their application and for increasing boldness with growing experience. The concept is a new one."

In dermatology, a field in which I have a special interest, a number of conditions lend themselves admirably to treatment by this relatively new electrical agent. A list of the more common dermatoses may not be amiss: angioma, callositas, cicatrix, clavus, condyloma acuminatum, cornu cutaneum, dermatitis papillaris capillitii, fibroma, keloid, keratosis, lupus, lymphangioma, milium, molluscum, nevi, neurofibroma, verruca, and xanthoma. If the accessible malignancies are included in dermatology, one finds surgical diathermy ideal for basal cell epithelioma, melanoma, and those unfortunate instances of metastasis in otherwise inoperable prickle cell growths.

In the field of the genitourinary specialist, a wide usefulness may be promised. Such lesions of the external genitalia, as verruca, persistent lichen planus papules, granuloma inguinale, epitheliomas, and chancroid occur to me at the moment. Circumcision could easily be done. Meatotomy would be rendered bloodless. Cutting the frenum or gee string, indicated according to some authorities in certain sexual neuroses, would be the work of but a moment. Bipolar use at low amperage would be indicated in disease of the prostate, softening stricture, destroying papillomas inside the bladder through the cystoscope, as well as malignancies for which other methods would fall short. Whether the gonococci are as amenable to destruction, as some assert, to the current is difficult to affirm at this time. The urethra and other parts invaded by the Neisserian organism are ideal hiding places and I for one would not depend exclusively on a nongermicidal method. On the other hand the sequelæ or complications of gonorrhea, the epididymitis, the follicular infections, the veru montanitis, and the prostatitis, not to mention the arthritides, respond to these modalities, as a rule.

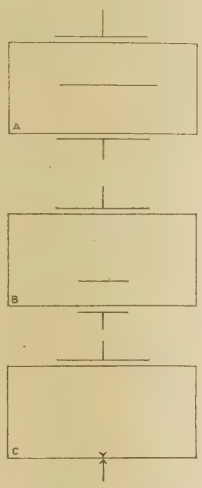

Fig. 1. — Diagram demonstrating the technic of applying high frequency modalities.

The proper application of high frequency modalities to the conditions just enumerated, depends on a definite knowledge of the existing pathology and an accurate working of the apparatus. No two machines delivering these modalities act in just the same manner. Hence, no one description of what button on the transformer, what space on the spark gap, or other seemingly definite technic can be arbitrarily insisted on here. Each machine must be tried out individually and after all, it is the clinical test that is of the highest value. Contact with a piece of fresh laundry soap will show the possible degree of dehydration as, also, the heat of the spark. Experience alone makes for perfection. No machine is fool proof.

A knowledge of physics is absolutely essential, as is that of construction of electrical apparatus. High frequency electricity, being an alternating current, has of course no polarity, thus differing from galvanism. The bipolar current of D'Arsonval generates heat according to definite physical laws. With plates of equal size, A, heat originates in the tissues at the site of greatest intensity, i. e., where the lines of currents cross. If one of the plates is smaller, B, the greatest heat is formed nearer to it. Use of a large plate with a needle as the second, C, electrode insures that the heat is greatest quite close to the needle point. Application of the monopolar high frequency of Oudin requires but a single electrode. The diagrams attached demonstrate the technic in a graphic way (Fig. 1).

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Diathermy in Bone Lesions*

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It has long been recognized that of all the physical means used to destroy and stimulate heat has been the method of choice. Time, experience and education have done much to show us the fallacy as well as the merits of the different methods used. For our present day purpose we have selected that form, known as diathermy, over against that of some of the more ancient and prehistoric forms, as we would select an up to date automobile against the doctor's cart or gig.

We need go into no explanations as to what diathermy is, but a brief review of its physiological action may do us all good. Heat we consider under three heads: conductive, convective and conversive.

Conductive heat marks the first step; as hot stones; bricks and poultices, the most primitive, and later on the hot water bottle and electric pad.

Secondly, we have convective heat as shown by the application of the electric light—modalities.

Lastly we have conversive heat or that power to generate heat within the tissue itself and to which process has been given the name diathermy. How does it act? By experiment in laboratories it has been found that a current of high voltage and low amperage will give a greater heat power in the tissue, without destruction, than one of high amperage and low voltage, the skin offering more resistance in the latter. High frequency currents differ from other

*Read before The American Academy of Physiotherapy, at Atlantic City, N. J., May 29, 1925.

electrical currents in their voltage and follow the most direct path.

The heat gained in the surrounding parts is due to the circulation of the blood and lymph from the parts through which the rays travel. It might be well also to speak of the two actions of the diathermy current. One is destroying and is known as surgical diathermy, and the other palliative and stimulative and is known as medical diathermy. It is with the latter that this paper has to deal. To understand it better it may be worth while to review its physiological action. This is shown by the increase in oxygen and red blood cells to the part stimulated and from there carried to all parts of the body through the blood stream. It also stimulates the glands, absorbs the serum of the distended cell, relieving the hyperemia, lessens pressure and quickens the circulation, thereby helping to remove the irritant. It acts as a sedative and thus relieves pain. The rise in temperature and increased blood supply take place through the periosteum, epiphysis of long bones, as well as through soft tissue. The marrow that produces blood cells is made more active and cell production is increased, broken down tissue and invading organisms or toxins are now rapidly eliminated. Thus it not only inhibits the growth of the infection but lessens its productiveness and we have made our first step toward reconstruction or recovery.

The means of getting the current through that particular part must be gauged by the condition of the part to be treated.

In dealing with bone lesions we select small electrodes in order to condense the current in preference to large ones, as used on soft tissues where the current should be more diffuse. As to the quantity of current used the patient must be our guide. A sensation of heat that is fairly comfortable and pleasant to the patient should be the rule. Much of this result depends upon the application of the pads which must fit snug and evenly at all times.

Now a word as to what conditions are the most successfully treated by diathermy. Diathermy does not do the work alone but is one of the best and most trustworthy aids to restore function. When a man comes to us with a fractured leg he prefers a straight one but demands a useful one. The surgeon reduces the fracture and lets Nature and time do the rest. Diathermy helps Nature and shortens the time.

Diathermy enters into the economic field as well as the functional. No one would expect diathermy to revive dead bone or sequestra but after the surgeon has done his work it will help Nature in the work of restoration and the bone tissue will reproduce much more rapidly.

The better we understand patients and the disorders from which they suffer, the better we can help them. Therefore I would urge an x ray examination as well as a carefully gathered history of all patients. By this means we learn the amount of the patient's resistance. If we have to deal with a broken bone, we study the cause of the injury, the style of the splint, length of time worn, and concurrent diseases, such as syphilis, tuberculosis, diabetes and other constitutional disease which must be accorded their various treatment in conjunction with our work.

Last month I was called to see a young matron, thirty-two years of age. She had one child, eleven years old. She had never been seriously ill. For some ten or twelve weeks she had had severe pain in her left leg which localized itself in the middle of the thigh. She had received treatment for everything from inflammatory rheumatism to flat feet. At the same time she noticed that her left breast was enlarging rapidly but there was no pain, until her arm began to swell and she thought she had more rheumatism. She called in a surgeon who operated and found a carcinoma.

Some ten days later I was asked to treat the leg. Upon examination I found the leg swollen, edematous and excessively tender to the touch, at the junction of upper and lower third. I asked for an x ray. The same afternoon she was seized with a sudden cramp and the pain became excruciating. A large lump had appeared over this sensitive area and the x ray revealed a pathological fracture together with destruction of the bone tissue which proved to be a cancerous metastasis.

In tuberculosis of bone, affecting joints and long bones, we use the x ray as an aid in diagnosis. Comparing the joint with the opposite healthy one and if no lesion is found, ray some other parts of the body in which by experience we have found these lesions are more likely to occur. Points to be noticed are difference in thickness of the soft parts, the presence of blurring or cloudiness, and differences in density.

The length of time the condition has existed and the personal resistance of the patient can be judged in a way by the amount of new bone formation. In joints we expect to find bony ankylosis much earlier than in nonarticular surface.

In the spine we look for shrinking of the intervertebral discs and marginal changes in the bodies, this alteration in structure causing the kyphosis. The angulations are as a rule well marked. Luetic infections occur at all ages and we may have one or more joints affected.

It should be a routine measure to x ray long bones as well as joints under suspicion. A typical luetic joint shows marked swelling with thickening of the membrane and widening of the fluid space as compared with the normal, together with changes at the junction of the tendon and periosteum.

In the smaller joints we find early destruction of the articular surfaces. Then again we may not find syphilitic evidence, but this may be forthcoming if some of the long bones are x rayed. This is important in the line of treatment as against that of a general arthritis and spells success many times where if syphilitic treatment were not used no results would be obtained.

Gonorrheal arthritis more frequently manifests itself in the joints and early, has no definite pathology or x ray findings. Here again we have the widening out or bulging of the soft tissue. Later we find shrinkage of the cartilage, narrowing of the joint space and still later bony ankylosis together with localized areas on the margin of the joint proper. There may be calcareous deposits in tendons, most marked at their attachment, which are known as spurs.

In the acute infectious arthritis the x ray is of little help only as to its negativism. In the more

chronic cases we find atrophy of both bone and muscle. When the periosteum is destroyed we have bone proliferation, leading to exostosis; occurring in a joint, we have ankylosis. In the acute infectious types we have swelling and effusion in synovial cavities which, if not relieved, will soon be followed by bone changes. The severity of the infection has much to do with the patient's resistance and unless early combated the changes will soon occur. These changes are due to new involvement and offer the most unsatisfactory results. In those due to focal infection eliminate the cause and if not too long established much may be accomplished.

Taken altogether we must recognize the infection, curb the cause, give proper systemic treatment and to do this diathermy is one of the most powerful aids known. It acts in a normal physiological way, builds up, relieves pain, and inhibits growth of the infection, by increasing the blood supply, absorbs serum and makes it possible for Nature to do her own work.

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Diathermy in a Case of Pneumonia Following Typhoid and Complicated by Diabetes

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Case.—Mr. F. A. V., a banker, aged sixty, married, with six children. The patient's mother died of pneumonia complicated by diabetes at the age of sixty. There had been excellent general health throughout all adult life until six years ago when diabetes developed. The patient was one of the very first to receive insulin and has been under insulin and special diet for three years.

On December 1, 1924, the patient complained of general aches and pains all over the body especially in the abdomen, with slight fever and diarrhea. There were three cases of influenza in the house and his complaint was first diagnosed as influenza.

The temperature ran from 99° to 102° F. for two weeks gradually subsiding, when it again rose sharply to 102° and above. A Widal test was taken and found positive for typhoid. This second rise indicated his first relapse which ran from the fifteenth to the twenty-fifth day of his illness, during which time his average calorie intake was but little over six hundred. He had hallucinations, twitching of the limbs and marked traces of sugar in the urine. The second relapse lasted from the twenty-seventh to the thirty-seventh day when it remitted until the fifty-first day, at which time there occurred a third relapse of typhoid. He suffered at this time from a persistent carbuncle.

The temperature reached normal on the sixtieth day remaining so until the sixty-fifth day when a patch of lobular pneumonia developed in the left lower lobe, fever reaching 104° F. on the seventy-second day.

The patient was seen by Harlow Brooks, Evan Evans, G. Reese Satterlee, George Draper and Warren Coleman in consultation with Barnesby and Glafke in charge of the case. On the seventy-sixth day there developed a second patch of pneumonia on the right side. At that time his blood sugar was 187, white blood cells 6700, 85 per cent. polymorphonuclears, and the stool was negative for typhoid. On the eighty-third day there developed a third pneumonic process in the upper left lobe, which patch persisted, his febrile reaction never reaching 101° F. until the ninety-fourth day when I first saw him.

His general condition at that time was as follows: Pulse rapid and slightly irregular. Much pain in chest and coughing heavily. Extremely nervous, unable to sleep more than thirty minutes at a time. Expectorating brown bloodstreaked mucus, limbs twitching a great deal. Nervous reserve entirely gone. He was receiving forty units of insulin, fifteen minims of digitalis twice daily, and one half grain of codeine every four hours which was not quieting the pain nor inducing sleep. Urine showed two plus sugar, blood sugar 256, 53 per cent. carbon dioxide, red blood cells 4,210,000, white blood cells 8,200, 74 per cent. polymorphonuclears.

An anteroposterior diathermy by two five by seven flexible metal electrodes was given for twenty-five minutes at 1800 milliamperes, passing directly through the heart area. The appearance of the patient changed remarkably during the first treatment. The lines of pain and anxiety faded from his face, his pain remitted, there was an improvement in color and he slept two hours and thirty-five minutes following the first treatment, waking up greatly refreshed.

The treatments were repeated five times daily with a steady improvement in the character of the pulse. This point is emphasized because one or two writers have recently expressed the fear of ill results following diathermy through the heart in pneumonia. It might be noted here in passing that in some eighteen to twenty cases where the location of the pneumonia made the passage of the heat through the heart area desirable there was a markedly greater improvement in the quality of the pulse than that which followed the treatment of pneumonia in other locations.

On the fourth day of diathermy treatment this pneumonic patch which had remained solid for fifteen days, entirely disappeared to physical signs and the patient's general condition seemed much improved. Then his temperature rose suddenly to 103° and a fourth distinct patch developed in the left lung outside the heat pathway directed at the former process. In the opinion of the medical men then attending, this sharp febrile reaction to the fourth

pneumonic area was made possible by the rest and storing up of energy secured through the relief diathermy afforded him. The diathermy treatment was immediately applied to the new area, with a steady and satisfactory reduction in temperature and improvement in general condition. The area cleared up on the seventh day. Diathermy was discontinued on the tenth. At that time his blood sugar was 237, red cells 4,296,000, white cells 8900, polymorphonuclears 74 per cent., hemoglobin 87 per cent. The patient was receiving two thousand calories daily.

For two weeks his condition slowly improved, the lungs remained clear, when on the one hundred and twenty-third day of his illness another small area of consolidation in a new location in the left lung appeared. Diathermy was again begun and his temperature returned to normal and the spot cleared in three days after which diathermy was continued three times daily for two weeks, twice daily for an additional week, with large plates to cover the whole lung in the attempt to raise his local resistance and prevent a further process developing. This plan was entirely successful, his temperature has remained practically normal for five weeks, and the patient is now able to be outdoors.

SUMMARY

The history of this case was considered of especial interest since the age of the patient, the complications and the long duration of the disease made it an extremely difficult one. The very low resistance of diabetics to infections of all kinds and the fact that typhoid gave this patient a leucopenia, when to combat his pneumonia he needed a leucocytosis, were the two outstanding difficulties with which we had to contend. The favorable effect of diathermy upon his condition was so clear cut that in the opinion of the patient, his family and the physicians who followed the case it was the determining factor in his recovery.

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Physics in Medicine*

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My object in presenting this theme for discussion is to point out the changing attitude of the clinician toward his problems through the developing interest in the physics side of many of them. There is scarcely a large clinic today that has not a physicist on its staff. The physicist in a clinic, in addition to his routine duties, should keep himself fully informed of accredited work in physics as it has to do with medicine, not only in physiology and pathology, but in the adaptation of recent discoveries and inventions to diagnostic procedures, so that remedial measures along physical lines can be planned, when indicated, with an approach to precision, at least, technic bettered and a stimulus be given for the improvement of our present modalities. He should be a special correlating agent bringing to the clinic the results of recent researches in physicochemistry, biophysics and cytology.

ATOMIC THEORY OF MATTER

Man's mind of two thousand years ago was quite as good, in my opinion, as man's mind of today, but at that time he was hampered by lack of equipment with which fully to investigate his creative conceptions, and prove or disprove them. His environmental contacts were perhaps of a less stimulating character than those of today, and he did not have specialists to turn to, or draw upon for inspiration. He was probably less gregarious. Still such men as Lucretius have given us in fairly definite terms the concepts of an atomic theory of matter as developed two thousand years ago by Leucippus and Democritus. The poem of Lucretius entitled *De Rerum Natura,* (Concerning the Nature of Things) was translated and made into English verse about sixteen hundred years later by J. Evelyn and begins as follows:

> . . . . For I of Gods and Heaven will discourse
> And shew whence all things else derive their source,
> Whence Nature doth create, augment and cherish,
> To what again resolve them when they perish.
> What things in our discourse we Matter call,
> *Prolifique bodies,* and the seeds of all,
> Or if such terms do not the things comprise,
> *Prime Bodies* name them, whence all others arise.

While recording the views of others in which he firmly believed, Lucretius strove to convey the idea that if subdivision were carried out sufficiently one would come at last to the individual corpuscles, or to use another term, atoms, something which cannot be cut. Naturally he had no conception of the atomic theories of today for the physics laboratories of his time, if any existed, had not yet extended man's perceptual fields so as to bring him into closer contact with his problems. Lucretius did, however, believe that disease was conveyed by small particles, and this idea was taken hold of by Fracastoro at the time of the Renaissance, after reading the poem of Lucretius; these ideas were, however, in disfavor until Pasteur laid bare his germ theory of disease.

The conceptions of Lucretius were subjected to attack and ridicule and we find little allusion to them except perhaps in the works of Shakespeare where the word atom is used to convey the idea of something extremely small. Lucretius has come into his own in relatively recent times, for we find that with the enormous strides of the last quarter of a century, initiated by the unexpected discovery of röntgen rays, followed almost immediately by Becquerel's discovery of radioactivity, and the discovery of the subatomic corpuscle, or electron, by J. J. Thomson, and the later investigations of the ionization of gases, the torch has been carried farther, and tremendous possibilities have been developed not only for man's betterment in a material way, but through the appli-

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cation of these principles to physiology and pathology, we are enabled to form more basic conceptions of disease, and plan more definitely for its prevention or possible cure.

And now let us consider what has led to these great advances, and what part has been played by the modest workers in the physics laboratories who have by the development of instruments of precision and amplification of our perceptual fields made it possible for us to see, weigh, measure and the like the objects of our interest. In Galileo's account of the invention of the telescope, he gives credit to an unnamed Dutchman for the idea that led to the development of his telescope and made possible the exploration of space, thus far, beyond the vision of man. While dynamics may be the field in which Galileo attained the greatest fame as a scientist, his name will always be associated with the invention of the telescope and astronomy. The development of a borrowed idea and its intelligent application led to the dawn of modern astronomy.

The title of perhaps the latest work of that distinguished British physicist, Sir William Bragg, is Concerning the Nature of Things (1925), the *De Rerum Natura* of Lucretius. Before, however, proceeding with the discussion of subatomic structure, let us consider for a moment what Dalton and the workers of his time had to do with the atomic theory.

The question of the nature of matter, the laws governing it and the like, had engaged man's attention for centuries, as these things have to do with the very foundations of the universe. The closer man came to the truth, a world of mobile corpuscles was revealed, and not a fixed mosaic. This led him into other fields, so that today, as our knowledge becomes more dependable, as Lukiesh says, we find emphasized the simplicity and unification of Nature. Modern knowledge has shown that chemistry is but a subdivision of the science of physics, just as optics and electromagnetism are parts of physical science. It is based on physical laws, not upon mysterious principles of affinities.

Boyle was the first definitely to state that substances were elements of matter, or combinations of them. Lavoisier established the principle of the indestructibility of matter and undertook crude but careful measurements of weight in chemical reactions. When Dalton later really made chemistry a science, he did so because the physical laboratories made it possible for him to determine weights and measures so that he was enabled firmly to found his idea of molecule and constituent atoms, and propound the law of multiple proportions, and develop the idea of relative atomic weights. Avogadro, in 1811, propounded a law that was destined to become a fundamental of the molecular theory of matter.

IONIC THEORY

The great Faraday found that by passing an electric current through various liquids, they were decomposed, the components possessing equal and opposite charges of electricity. How could Faraday have demonstrated ionization if the physical laboratory workers of his day had not provided him with the means of generating suitable electric currents? This led later to the knowledge that each atom has a definite charge and behaves in the presence of other atoms in accordance therewith.

In 1815 Prout basing his ideas on Dalton's atomic weights as amended by the more accurate work of Berzelius, suggested that the atomic weights of all the elements were the exact multiples of the atomic weight of hydrogen. Prout's hypothesis had a stormy career until quite recently when the modern theory of isotopes and inferences from radioactivity and the artificial disintegration of the atom gave it support. Ernest Rutherford, after years of study of radioactivity in nature, concluded in 1918 to attempt the disruption of the atom artificially by bombardment. The emission of an alpha particle from an atom is a spontaneous disruption of its positive nucleus according to modern views of atomic structure. Rutherford first bombarded nitrogen molecules by means of alpha particles emitted by one of the radioactive elements of the radium series and found that the disruption of the nuclei of nitrogen atoms resulted in the production of hydrogen nuclei. He also disrupted the atoms of boron, fluorine, phosphorus and aluminum with the same results.

Naturally this experiment gave added support to the theory that elements were built up on ions of hydrogen and electrons.

It would seem that the beginnings of things were relatively simple, still through lack of suitable equipment, through lack of training in scientific research and its principles, and by reason of various other deterring factors, it is only within the last two or three decades that man, although the desire existed, has been able to make satisfactory progress toward a better understanding of the beginning of things. One investigator must stand, and has stood, upon the shoulders of his predecessors, and in the end where noticeable advances have been made, it was usually because the period was timely.

THEORIES OF RADIATION

Let us consider Maxwell's wave theory of light. Who would have thought that the work of Oersted and Faraday in the early part of the nineteenth century was preparing the way for the present electromagnetic theory of light, and who could have visualized the unification of the wave theory of radiation and its extensions and modifications in the service of science? Following Maxwell, the mere mention of such names as Hertz, Newton, Herschel, Ritter and others, brings to mind service to mankind. While it is now known that every radiation produces a chemical effect, it was Ritter who, in 1801, found that the chemical action of sunlight extended beyond the violet end of the visible spectrum, and thus really discovered ultraviolet radiations.

In 1895 Röntgen discovered x rays, and three years later the Curies discovered radium, which was found to emit very short penetrating gamma rays, alpha particles, and beta particles, and recently Millikan has bridged the gap between the longer Röntgen rays and the ultraviolet region. It must be remembered that only those rays that are absorbed are effective and that it is only those wave lengths whose frequencies harmonize with the oscillations of the electrons of the tissues that are absorbed.

The saying that "seeing is believing," is one of the oldest and truest, in fact it has been through ex-

tended vision, largely, that man has become better acquainted with himself and his environment. The telescope has already been alluded to. The microscope has played a very vital part in the research work in pathology and bacteriology, and in other fields, and now the ultramicroscope has opened up many features of the vital field of the colloids. We are rapidly getting away from placing too much dependence upon observations of dead stained tissues in studying physiology and her erring sister pathology. Today we find groups of zoologists, biophysicists, physiological chemists and cytologists, carrying on their researches by means of living tissue cultures. Almost without exception they will concede that in the excitation transmission phenomena of protoplasm the first impulse is electrical, the second chemical and the third functional activity or structural change or both.

In the study of gross pathology the galvanometer is destined to play an important rôle, in fact in a recent public address Dr. George W. Crile made the statement that his galvanometric readings of the electrical potential of tumors were among his most dependable methods of determining the presence or absence of malignancy, stained laboratory sections notwithstanding.

Since the advent of the three electrode vacuum tube, physicists have devised many important instruments which depend entirely upon it for their success. The most minute currents may now be amplified through this device, until they are quite appreciable. Similarly high voltages and large currents can be controlled with ease. It is startling to realize that this device has been adapted to measure a change of distance equal to one hundred millionth of a centimetre, which is nearly the diameter of an atom of hydrogen. Temperature variations of the order of one sixteen thousandth of a degree centigrade fall within its range. As far as I know these devices have not been employed for diagnostic purposes, but that they will be so employed there is little doubt.

It is quite safe to say that all forms of matter are manifestations of electrical phenomena. Mathews states that all electrochemical phenomena are surface activities. Henderson quoting Bechhold says, "Now of all known physical structures there is none which rivals protoplasm in its fine complexity, and adsorption is therefore unquestionably a prominent agent in deciding its physicochemical constitution. Moreover, adsorption influences and complicates almost every process of chemical physiology, for no product of life is without its colloids, i. e., substances which are finely divided and therefore endowed with great surface areas. In truth, colloids are probably quite essential to fine complexity, and so to every conceivable form of life." It is interesting to note that in a cubic centimetre of tissue there is a little less than a square inch of surface area, while if the same bulk of tissue is split up into particles of colloidal dimensions, the surface area is close to an acre and a half.

In former papers I have stressed the point that the boundary line between chemistry and physics is fast being obliterated and in support of that contention have quoted the late Sir William Bayliss (1923) as follows: "It looks as if, before long, we shall not be contented with a statement that such and such a particular phenomenon is chemical but demand an explanation in terms of the physics of the atom." It is the valence electrons that have to do with the chemical activities of the atom. It is the valence electrons that have to do with physiological and pathological activities which lead to chemical changes. The correlation of the work now being done by biophysicists and cytophysicists should be more actively carried on by clinicians, and their associates. Many cherished traditions must be scrapped and I can assure you it takes a flexible mind properly to investigate, digest and assimilate the indisputable facts evolved by modern research. Nearly five years ago I announced the hypothesis that dynamic electrical equilibrium or preferably dynamic electron equilibrium in the human cell structure is a natural and normal condition indicating a state of health in that structure and that any upsetting of this equilibrium except through normal physiological excitations and transmissions, means an unnatural or abnormal condition indicating disorder or disease as the case may be. While this contention was set forth in the hope of bringing clinical medicine in line with the electron theory, what little comment it excited at the time and since has been largely antagonistic, I see no reason for changing my attitude. Of course in order that we may have a dynamically balanced potential, we must have a dielectric. In cell structure we find the semipermeable membranes playing the rôle to perfection. It is here we find our interfacial phenomena and forces active. Adsorption of colloids brings protoplasm on either side of the semipermeable membranes into intimate association with the heart of the electrochemical phenomena of the cell, on its particular side of the membrane.

THEORY OF OXIDATION

Mathews (1924) says in part in discussing oxidation, "That oxidation does involve, in all cases in which the process can be watched, the transfer of positive and negative particles or electrons, and that this is the essence of the process. Moreover, the more easily a substance gives up a negative charge the more active will it be as a reducing agent; and similarly the more easily it gives up a positive charge, or acquires a negative, the more active will it be as an oxidizing agent. Oxygen acts as an oxidizing agent because it has a great tendency to take away a negative charge (electron) from other substances and go over into the form of an oxygen ion, or of electronegative oxygen."

"The great importance of the theory from the point of view of physiological chemistry is that it shows at once that every oxidation in protoplasm is at the bottom an electrical process involving the transfer of electrical charges. In other words, an electrical disturbance of some kind, albeit possibly within molecular dimensions, must occur in every combustion of the protoplasm. It thus furnishes a point of attack of the origin of the electrical disturbances which are so characteristic of living matter of all kinds and enables an understanding of the disappearance of these currents when the respiration of the protoplasm is prevented."

Quoting Mathews further: "The energy of living things, whether it appears as heat, light, electrical disturbances or movements of masses, is due then directly, or indirectly, to the combustion of the car-

bon and hydrogen of the body by the oxygen of the air. Living matter is a combustion engine, with cylinders and connecting rods of molecular dimensions and provided possibly with a sparking device not so dissimilar in principle from that of an internal combustion or explosion engine. The discovery of the origin of the energy of living protoplasm in the combustion of carbon and hydrogen was one of the greatest, if not the greatest and most fundamental discovery in chemical biology."

I am inclined to turn this over to the physics department following the suggestion of Bayliss.

CELL STRUCTURE

Let us for a moment visualize cell structure without going into the details of cell chemistry. The nucleus is electropositive and acid separated by a semipermeable membrane from the electronegative alkaline cytoplasm. As far as I know the majority of pathological entities are electropositive in charge, i. e., the cytoplasm has been depleted of electrons, oxidation (cell respiration) is interfered with, hydration follows and the formation of lactic takes place. The cell is sick. The semipermeable membrane has become more permeable, the potential is lowered; response to impulses is feeble. Lillie has shown that calcium tends to hold up the semipermeability of the filmy cell membranes, in other words, to check permeability. The importance of thoroughly investigating calcium metabolism clinically is obvious.

If it is true that certain bacteria are cells without cytoplasm, in other words, wild nuclei, devastating the tissues and fluids of the body in their cytoplasmic activities, then it is not difficult to account for such pathologic cell changes as described, locally, generally or selectively. The electropositive bacteria deplete the electronegative cytoplasm of electrons and the healthy dynamic equilibrium is disturbed or possibly destroyed as the case may be.

APPLICATION OF PHYSICS TO MEDICINE

Through the application of the principles evolved by the researches in physics to clinical medicine, we are acquiring a more definite conception of the basic factors of health and disease. In my opinion out of the physics laboratories will come the greatest strides on the remedial side of medicine, indeed, the advance is well under way.

In dealing with a subject so vast as physics in medicine only a point here and there could possibly be discussed, still I have striven to lead the trail into the field of cytology or cytophysics if you like. No one has done more than Dr. Crile, of Cleveland, to correlate physicochemistry with clinical medicine. His addresses are always stimulating and instructive.

In *Science* on February 27, 1925, there appeared an abstract (1) of a paper by Heilbrunn in which he discusses the electrical charges of cells. Robert F. Loeb in April, 1925, wrote a paper on colloidal chemistry urging physicians to study intensively physicochemistry. Dr. W. J. Mayo, of Rochester, in a recent paper (3) says, "Physicochemistry of the human body concerns life itself. A proper understanding of these vital processes is necessary to every man who practices medicine no matter what his specialty may be."

To the physicists we owe much of our present armamentarium, still they will in the future, as they have in the past, look to us for suggestions along various lines leading to modifications of the several modalities to meet specific clinical indications. As hinted at above, we may soon have at hand instruments of precision for observation that may even reveal submolecular activities of one sort or another.

In planning a technic for treatment we should keep before us how energy can be transferred from one molecule to another as pointed out by Mathews, viz.: 1, by radiations in a series of pulses; 2, by the transfer of an electron; 3, by conductors of electricity.

If the foregoing is true then it must be in one, or more, of these ways that we accomplish results with our present equipment. That our modalities are too inelastic I believe will be generally conceded. That they are used too vigorously may not be so readily accepted. Pathological indications should be our guide. Thinking in terms of the strength of the bioelectrical currents of physiology and pathology, we should approach these current strengths in treatment, letting the factor, time, be the determining indicator in the amount of dose rather than an increase or decrease of amperage or voltage for our range of effects, in other words, employ sedation rather than intensity except in specific cases. We should strive for preventive or corrective effects, where possible, that is, to accomplish reversibility in pathological cells. Crile has stated that a rise in temperature of one degree centigrade increases oxidation ten per cent. and conductivity two and a half per cent. when using diathermy. Why go farther unless there is some specific indication? I am inclined the same way in the use of ultraviolet radiations, which is in line with the policy of Rollier in using solar light. Only use intensive treatment where indications for intensive treatment exist. Those of us who were using ultraviolet radiations four or five years ago little thought the field for their use would reach its present dimensions. The correlation of the researches in biophysics and clinical activities have accomplished this.

The practice of radiotherapy is in its infancy. The heavy haphazard doses of x rays and gamma rays will soon find their field of usefulness materially narrowed and the physics laboratories will accomplish this end. The small oft repeated doses of x rays are coming into their own. They reach cells undergoing mitosis and do not materially disturb normal cells. When mass destruction is necessary we have desiccation, electrocoagulation and the socalled endothermy methods, the last advocated by Clark, McFee, Wyeth, Howard Kelly and others. These latter procedures are revolutionizing surgery in many fields. The technic is entirely new and must be practiced repeatedly before skill is attained and this is only possible through a clean cut conception of the physics of the procedure. Physics is effecting a bewildering transformation in medicine and the outlook for humanity is distinctly better by reason of it. My plea is for a continued and closer correlation between physics and clinical practice which offers the most promising outlook in medicine today.

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General Indications for X Ray and Radium Therapy

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The series of events which led to the present perfection of technic in the use of radium and x rays need not be chronicled here. It suffices to state, however, that since the discovery of x rays by Konrad Röntgen, and of radium by Mme. Curie, exhaustive biological and biophysical experimentation has resulted in the standardization of this form of therapy so that its use has become universal and the results obtained are at times remarkable, if not actually startling.

It must be borne in mind, however, that radiation therapy cannot and should not be considered a panacea for all forms of disease, nor is its use entirely free from any sequelæ.

While the use of x rays is relatively harmless for diagnostic purposes, their promiscuous application as a therapeutic agent by the uninformed is bound to result disastrously. The radiations affect not only the disease, but also its host. An intimate knowledge of the physical properties of radium and x rays and a fair knowledge of pathology combined with good common sense, should be included in the curriculum of the wouldbe radiation therapist.

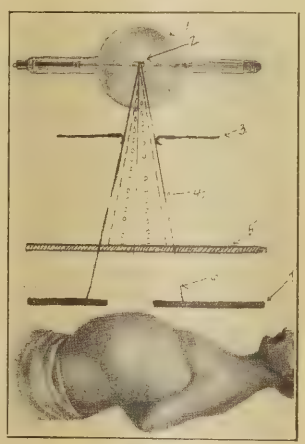

FIG. 1.—Semidiagrammatic representation of x ray radiation. 1, bulb; 2, target; 3, cone; 4, x ray beam of soft and penetrating rays; 5, copper filter; 6, penetrating rays only; 7, lead rubber shield.

TYPES OF RAYS

It would not be amiss to state briefly the physical characteristics and biological effects of the rays employed in this form of therapy.

Radium emits several types of rays, the most important being the beta and the gamma. The former are escharotic in their action and are analogous to the soft x rays. By the interposition of a suitable filter such as silver, platinum or lead for radium, and aluminum, zinc, or copper for x rays, the objectionable rays are to a considerable extent eliminated.

The gamma rays of radium consist of ultra short waves and are similar to a marked degree to the very hard and penetrating röntgen rays.

All of these rays can be polarized, which is of advantage, producing a spectrogram of the emitted radiation. Their wave length being measured with suitable instruments, the hardness of the ray is thereby determined and the kilovoltage computed therefrom. The shorter the wave length, the harder or more penetrating the ray. The gamma rays of radium, for instance, measure about .015 Å unit which is equivalent, approximately, to .0000000001 centimetre.

The power of these electrostatic waves to ionize air is utilized in an instrument, the iontoquantimeter, used in the estimation of doses, particularly of röntgen rays.

BIOLOGICAL EFFECT

It is a well known fact that normal and pathological tissues, as well as animal tissues, do not react alike to radium or x rays, some being readily susceptible, others mildly resistant, while a third group are only feebly if at all affected by any form of radiation.

Hirsch (1) classifies relative sensitivity of pathological tissues into six classes, namely, 1, very resistant; 2, resistant; 3, moderately resistant; 4, susceptible; 5, very susceptible; 6, most susceptible. "The more fibrous the growth, the more resistant; the more cellular the growth, the less resistant."

Then again, embryonal cells are more susceptible than the mature adult cells. An example of the former is the basal cell epithelioma, while the prickle or squamous cell type is quite resistant.

Radiation therapy may produce one of the following conditions or a combination of reactions may take place, depending, of course, on the dose administered.

1. Retard mitosis and enhance a normal metabolic process. This action is well illustrated in the treatment of leucemias.

2. Augment retrogressive metamorphosis, which condition is observed in the treatment of a persistent thymus, megalosplenia, and simple adenopathy.

3. The production of karyoklasis (nuclear destruction) can be demonstrated in the treatment of malignant neoplasms.

While this is a practical description of the ultimate results usually obtained, the progressive and successive stages that occur on irradiating lymphoid tissue are classically summarized by Ivy et al (2) as follows:

End of fifteen days: 1. Infiltration of red cells. 2. Proliferation of fibroblasts.

End of two months: 1. Gland diminished in size. 2. Less red cell infiltration. 3. Fibrous tissue stroma increased.

CHOICE OF EMANATOR

By the emanator, the author refers to radium or x ray apparatus. These have their indications according to the adaptability of the particular applicator and also according to the wisdom and best judgment of the therapist. The following are the determining factors which guide one's choice of the type of radiation therapy to be employed and incidentally aids in the expression of a probable prognosis:

1. *Biological structure of lesion.*—It is important that the type of lesion be determined microscopically where this is feasible. The necessity of ascertaining whether the epithelioma is of the basal cell or the squamous cell type has already been pointed out above. Cervical or uterine pathology frequently requires microscopic examination in order to determine the presence of malignancy. Hemorrhages occurring as a result of small fibroids may well be treated with the x rays. The additional use of radium, however, enhances the beneficial result. On the other hand,

if a malignancy is discovered, the application of radium locally to the point of tolerance and x rays from above should be the method of procedure. Breast tumors often require differentiation. The presence of a fibrous mass would simply indicate extirpation of the local lesion, whereas an adenocarcinoma requires a much more extensive resection and preoperative and postoperative radiation.

2. *Depth of lesion from skin surface.*—The necessity of determining this can readily be conceived in view of the fact that one must compute beforehand the amount of filtration necessary, depending on the depth of the lesion and the interposing structures. As an example of this, a malignant mediastinal tumor which requires deep therapy would have to be treated very cautiously on account of the presence of the thyroid, larynx, and trachea. Edema of the larynx may occur should a large radiation be given. The administration of radiation therapy is also limited by the reaction of the skin.

The use of x rays in the treatment of carcinoma of the esophagus has proved futile. Radium introduced through a gastrostomy opening may be effectual in selected cases, and should be tried in preference to other mutilating operative procedures.

3. *Accessibility to lesion.*—It is readily apparent that superficial lesions can be treated with either radium or x rays. The radium applicator is especially adapted for small skin lesions. In treating carcinoma of the tongue, for instance, while still superficial, the use of radium needles or radium seeds embedded in and around the tumor has proved to be of great value. The associated metastases to the cervical lymph nodes, on the other hand, require the x rays in preference to radium.

4. *Distribution of lesion.*—Small lesions can be treated with either x rays or radium, but diseases of the type of Kaposi sarcomatosis which is usually generalized is amenable to x ray therapy, which form of radiation can be distributed over a rather large surface. Myeloma is another type of disease for which x ray therapy is more adapted. The leucemias, Hodgkin's disease and lymphosarcomatosis are other examples for which the x rays must be used in preference to radium. In other words, the more disseminated the disease, the less is radium the emanator of choice.

5. *The economic problem.*—This can by no means be ignored. Radium element or the radium salt, the state in which this emanator is used in medicine, is extremely expensive. The production of emanation seeds and needles has reduced the prohibitive cost to a great extent. The therapeutic properties of the emanation are identical with those of the radium salts.

RÉSUMÉ

1. Radiation therapy is indicated in the following conditions: a. Paraplastic diseases. A few examples of this class may be mentioned: Adenomata simplex, fibromata (nevi, keloids, neuroma), lymphadenomata simplex, lymphogranulomatosis (Hodgkin's disease), leucemia (splenic, myelogenous). b. Neoplastic diseases: Carcinomata and sarcomata.

2. The biological structure of the lesion must be carefully studied so that the proper type of radiation, filtration, and dose be selected.

3. Preoperative and postoperative radiation therapy should be employed where the surgical removal of a neoplasm can be accomplished.

4. The use of radium in maximal doses for esophageal and cervical malignancy is a *sine qua non.*

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Ultraviolet Rays in the Treatment of Some Nasal and Oral Conditions*

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It is true to state that the ultraviolet rays generated from the quartz mercury vapor lamps are invaluable in medicine and surgery. And it is also true that few physicians and surgeons realize the importance of this form of therapy. We must admit that much valuable information on the subject has been published as the result of experimentation, clinical study and observations, which have been and will be distinctly valuable in the development of this important branch of therapy. However, much of the work along these lines still remains in the experimental stage.

Space will not permit a consideration of the value of the ultraviolet rays in pathological conditions. My purpose is to concentrate on the value and the technic of the application of the ultraviolet rays in the treatment of some affections of the nose, mouth and throat. A clinical study has been made of over two hundred cases referred for treatment in a large general physiotherapy clinic during the past two years. This group of patients were suffering from acute nasal infections, nasal accessory sinusitis, hay fever, nasopharyngitis, acute follicular tonsillitis, incipient peritonsillar abscesses, Vincent's angina of the gums and throat, pyorrhea alveolaris and tuberculous ulcerations of the buccal cavity. Many of these cases were not treated by the ultraviolet rays alone but either preceded or supplemented by other appropriate physical measures and other indicated procedures. However, in some selected cases the patients were treated by local and general ultraviolet irradiation alone, the technic used and case reports to follow demonstrating the applications and the results achieved.

*Read before the American Academy of Physio Therapy, Atlantic City, N. J., May 25, 1925.

All patients treated were referred from the special nose and throat clinic, where thorough examination and diagnosis are invariably made, by a specialist; checking up of final results by the latter, after treatment, is the rule. A full clinical report of findings are submitted including x rays and reports of smears and culture growths. Before treatment is outlined a complete description is made of all clinical findings and subjective symptoms, these being accurately detailed in the case record.

The application of the ultraviolet rays in competent hands is safe and potent. The use of ultraviolet irradiations is a conservative treatment and will promptly clear up most infections of the nose and throat thus avoiding operative procedures in many instances. It is not my intention to discourage certain indicated operative procedures but experience has shown that far too many operations are performed on the upper respiratory tract and some do more harm than good.

The ultraviolet rays have a dual action in that the spectral bands are chiefly bactericidal from the water cooled lamp and chiefly biological from the air cooled lamps. The combination application of the rays emitted from the water and air cooled lamps form a basis for a rational treatment. The former applied locally to affected tissues to destroy infection and the latter to the surface of the body to be absorbed by the circulating blood thus increasing the general body resistance by favorable action on the blood.

The following information is given better to understand the action and reaction of ultraviolet rays, when applied to the tissues. There are two types of lamps supplying ultraviolet rays, air cooled and water cooled, and both produce ultraviolet irradiations from quartz mercury vapor burners. It must be realized, however, that their construction and therapeutic actions are different. (1) The air cooled lamp emits the longer light waves between 3,920 and 3,000 Angstrom units; the water cooled lamp, the short wave lengths, between 3,000 and 2,000 Angstrom units. The rays of long wave length emitted from the air cooled lamps are more penetrating than the rays of shorter wave length. They produce an erythema solare or sunburn more quickly and with greater intensity. They are dominantly biological, chemical oxidizing, relatively penetrating and a metabolic synergist. The shorter wave lengths from the water cooled lamp differ in being dominantly bactericidal, chemically reducing, relatively superficial unless given under compression and a metabolic depressor.

The ultraviolet rays from an air cooled lamp are readily absorbed into the capillary blood stream and carried to all parts of the body; they stimulate the phagocytic action of the leucocytes with increased formation of antibodies, and increases the quantity and quality of the red blood cells. When the physical resistance of a host is inadequate, it is a good practice to employ the general body ultraviolet irradiations from an air cooled lamp in addition to the treatment of local manifestations. The general absorption of the ultraviolet rays into the body increases tissue resistance and thus indirectly eradicates disease conditions. The ultraviolet rays from both lamps are bactericidal, the rays from the water cooled lamp being much more so, thereby destroying all forms of pathological organisms with a greater degree of certainty. It must be remembered that ultraviolet rays will not pass through ordinary glass, the pure fused quartz applicators being the best available conductors of ultraviolet energy. It is of importance to exercise extreme care in giving ultraviolet irradiations for they readily cause a burn of the skin or blister the mucous membranes. This fact, as just stated, is not particularly harmful but is not desirable unless a destructive action is indicated. This accident can be avoided by careful standardization of the lamps for the initial treatment and then proceed by gradually increasing the time of exposure and in case of the air cooled lamp varying the distance from the part. A lamp is standardized by finding out the distance from the part and the time required to produce a mild erythema solare or sunburn. The lamps should be permitted to burn for at least five minutes in order to reach maximum efficiency before treatments are given. The reaction depends on the type and intensity of burner and duration of exposure.

Some European practitioners favor the arc lamp as furnishing a greater volume of ultraviolet rays than does the quartz burner, the latter having far wider use in this country. The rapid wastage of the rods in the arc instrument on passage of the current, however, is a factor that would prejudice many physicians against its employment as compared with the more convenient quartz lamp. Authorities differ as to the relative value of the ultraviolet rays furnished from the arc and mercury quartz lamps. Although having had limited clinical experience with the arc lamp I maintain that the selective spectral band from the mercury quartz lamps yields richer ultraviolet rays than the carbon arc lamp which from its physical makeup yields a combination of all rays of the solar spectrum, together with heat production.

TECHNIC OF INTRANASAL APPLICATION

A Muehler nasal quartz applicator is attached to a watercooled lamp. The applicator at first is inserted gently as far back into the nasal cavity as possible, then is withdrawn slowly to permit of fractional irradiation to the entire mucosa. The applicator should not be pressed heavily or faced against the nasal membrane but allowed to lie gently upon the affected parts. In complicating sinus disease the applicator is inserted so that the tip approaches the affected sinus opening as nearly as possible. I have designed a special curved quartz applicator to accomplish this procedure and have found it particularly beneficial in directing the ray into the fossa of Rosenmuller which is often the site of infection. In using the straight flat Muehler quartz applicator the tip can be directed upward or downward as indicated. Duration of treatment at first lasts one minute to each nasal fossa; fractional irradiation, about fifteen seconds; this is increased a half minute each subsequent treatment up to five minutes or longer, fractionally applied. It must be remembered, in this connection, that most of the ray is emitted at the tip of the applicator, only stray rays bounding from the sides. Treatments should be accurately timed to avoid blistering, a contingency not specially harmful but not desirable.

The technic of application to the posterior nares and nasopharynx is made with the Sampson hay fever quartz applicator which is designed for this especial purpose, permitting a general irradiation to

these regions. This effort may start coughing or gagging by the patient, to be obviated by applying a solution of novocaine or cocaine about the uvular and nasopharyngeal wall. The exposures are made to the throat with Baldwin and Plank quartz applicators concentrating the rays to the affected tissues, always remembering thoroughly to expose the tonsillar and peritonsillar regions to avoid extension or complication of infections from the nose even though these tissues appear apparently free from disease. Duration of treatment to the nasopharynx and posterior nares is for one minute at the outset increasing a half minute each subsequent treatment. Exposures to the throat are given for the same periods, all treatments being accurately timed with the interval time clocks. All cases not complicated by acute sinusitis are improved after an average of three to four treatments and altogether relieved after five or six applications. When there is an acute nasal accessory sinusitis complicating nasal infections, and there usually is to some degree, the applications of ultraviolet rays are continued locally and generally to the body but in addition other physical measures, as the radiant light and heat, modified diathermy and intranasal high frequency using the nonvacuum insulated electrode attached to the Oudin current of a good high frequency machine should be used.

The technic of applications of ultraviolet rays for the treatment of Vincent's angina, pyorrhea and other infections of the gums, mouth and throat are carried out along the same principles except that the initial applications are more intensive beginning at two minutes' duration under compression to dehematize the part, which is succesively increased one minute for each subsequent treatment until a good reaction or slight blistering of the involved tissues is obtained. When this point has been reached omit treatment for four or five days to allow reaction to subside and then repeat the application. These applications are made with a set of three Sampson pyorrhea quartz rods which are made for this purpose. The affected gums are rayed anteriorly and posteriorly, sometimes six separate applications around one tooth, three anterior and three posterior being necessary.

Some cases of hay fever respond readily to the ultraviolet irradiations, although the primary factor still remains a mooted question; certain protein pollens with the presence of bacteria are, however, factors to be considered. The technic used for the relief of hay fever is a combined application of the ultraviolet rays to the anterior nares with a Muehler quartz applicator, to the posterior nares with the Sampson hay fever quartz applicator, together with a general application to the throat using a Plank quartz applicator. Applications are given in sequence beginning at one minute duration each, successively increased a half minute each subsequent treatment. Treatments, if started sufficiently early before the expected time of attack, will shorten, favorably modify and often abort the distressing symptoms. When treated during the attack intranasal high frequency is given for five or ten minutes to each nasal fossæ preceding the ultraviolet application. This combination treatment often gives prompt, efficient and adequate relief. The treatments at first should be given daily and later repeated as symptoms require.

I wish to emphasize the value of prescribing the general tonic ultraviolet irradiations from the air cooled lamps, preferring regional exposures beginning at two minutes' duration, with the lamp at a distance of thirty inches, in addition to the local intensive treatment with the water cooled lamp, in all infectious processes. This combined irradiation has been found to be an important adjuvant to increase the body resistance against infection, thus enhancing the building up of the "general rundown" system, which is often clinically demonstrated in patients suffering from nose and throat infections. Many foci of infection of the nose and throat can be cleared up by careful and judicious use of ultraviolet irradiation. It has been observed that ultraviolet irradiations will relieve pain when applied to mucous membranes. During the course of these treatments patients usually remain at their work in comfort. The progress in all cases is uniform and ultimately beneficial. The length of time to obtain maximum improvement varies in accordance with the individual case, duration of infection, its severity, extent of involvement and the bodily resistance of the host. Treatments should be given at first daily, gradually reducing them to alternate days and then to more infrequent applications as symptoms require.

The following cases illustrate the possibilities of the above described technic:*

Case I.—A. H. was admitted to the clinic August 9, 1923, with acute rhinitis, acute follicular tonsillitis with a beginning peritonsillar abscess. After receiving two intensive local ultraviolet ray treatments to the nose and tonsillar regions prompt relief was obtained and the peritonsillar abscess aborted. Technic: Three minutes' compression with the Plank quartz applicator to tonsillar areas and two minutes to the nasal mucous membranes with the Muehler quartz applicator. To make sure of avoiding a recurrence, two additional daily treatments were given and the patient was discharged as maximum improved.

Case III.—W. B. Pyorrhea alveolaris, receded gums and loose lower incisors teeth, three of which were to be extracted. The teeth were scaled prior to the ultraviolet ray treatment. Technic of application: Quartz rod applicators on a water cooled lamp, compression beginning at two minutes, successively increased one minute until a fourth degree erythema reaction or blistering was obtained to affected gums anterior and posterior. Patient received a total of twenty applications, after which the teeth tightened, and diseased areas disappeared. The three teeth which had been advised extracted were saved. Discharged as maximum improved.

In the treatment of pyorrhea, the ultraviolet ray acts as a destroyer of diseased tissues and a restorer of healthy tissues of the gums.

CONCLUSIONS

1. The ultraviolet irradiations are effective in the treatment of certain conditions of the nose, mouth and throat.

2. The ultraviolet rays are essentially bactericidal and biologic in action but vary therapeutically according to the wave length of their spectral bands and technic of application.

3. A carefully systematized technic of application

*Two additional cases cited by the author were omitted for lack of space.

must be employed to derive maximum value in the treatment of conditions of the nose, mouth and throat.

4. Ultraviolet ray therapy, by means of the modern quartz mercury vapor lamps, is an important addition to our treatment armamentarium.

5. Ultraviolet irradiations should always be administered by a trained physician or a competent aide or technician to achieve the best results.

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Value of X Ray in the Diagnosis of Rectocolonic Diseases

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Of late I have come to consider the barium enema study of the colon equally as valuable as the rectosigmoidoscope in the diagnosis of rectocolonic diseases. This opinion has been impelled by a consideration of a fairly large number of cases in which some element of pathology would have been overlooked had not a barium enema study been made in compliance with a definite indication to be mentioned later. That this high opinion of the value of barium enema study is not generally held must be evident when we note that such a study is infrequently made except in conjunction with a general gastrointestinal series. Even in the course of this, the examination of the colon often partakes of a perfunctory nature. It would seem, therefore, that the true value of the röntgen enema is not, as yet, fully realized. Perhaps the trouble lies in the fact that no worker in the field of rectal diseases, so far as I am aware, has, as yet, pointed out the definite indications for its employment or touched on the need of such an examination. It is with the object of calling attention to what I consider a neglected means for obtaining precision in proctological diagnosis that the following is submitted. We see cases of rectal or colonic disease in which the diagnosis is at best difficult and others in which symptoms are misleading. As instances of this situation the following case reports are cited. They will also serve to substantiate my contention that the modern requirements for thorough rectocolonic examination must include, if the condition of the patient permits, fluoroscopic and plate examination of the distended colon and similar examinations following evacuation.

Last February a lady forty-four years of age came complaining of pain high in the rectum and some soreness in the left iliac fossa. Associated with this was a rather suddenly developed tendency toward constipation. Rectoscopic examination showed nothing abnormal in the anus, rectum or sigmoid. Palpation of the abdomen elicited a tenderness over the iliac fossa and showed the presence of a mass. Under the circumstances, malignancy was suspected and a barium enema study of the colon was made with the result that a diagnosis of colonic stasis due to adhesions was made and the presence of cancer ruled out. Colonic irrigation and diet resulted in a cessation of symptoms.

Some time later a patient was referred to me with the request that I remove his hemorrhoids. As a matter of invariable custom I did a complete rectosigmoidoscopy which showed the presence of internal hemorrhoids, but no other lesions of rectum or sigmoid. In accordance with a lesson that experience has taught me I did not, however, proceed immediately to operate. The patient was over thirty-five and although apparently robust I suggested a barium enema study. The patient's family physician thought this unnecessary but I finally prevailed upon him. The barium study disclosed the presence of a carcinoma of the descending colon. Had I operated upon this man for hemorrhoids, what a great injustice would have been done him! By the barium study we discovered the growth at a time when operation was still practical and promising of success. At operation exploration confirmed the diagnosis. An annular carcinoma of the descending colon was found. His only symptoms had been a sudden tendency toward constipation and the discovery of hemorroids upon examination.

At another time a lady was referred to me with the diagnosis of carcinoma of the sigmoid colon and the request for my opinion as to its operability. The diagnosis was based on the fact that she had persistent bleeding from the bowel and had lost considerable weight. Rectosigmoidoscopic examination yielded no satisfactory evidence, the growth being presumed to be at a higher level. Barium enema study of the colon showed a marked diverticulitis but no evidence of new growth. Under appropriate treatment she was symptomatically improved and with care the diverticulosis should give her but little trouble. Eight weeks' observation has shown marked improvement in color, some increase in weight and all of this despite the fact that the patient is obsessed with the idea that she has cancer. From the latter illusion she was persuaded by an explanation of the x ray pictures.

The above mentioned cases are but a few instances where the x ray has been of incalculable value. In many others, to be sure, negative findings were made but even these have their value if only to give one a sense of confidence and assurance.

On the basis of a practice limited entirely to rectal diseases, I have come to certain conclusions in regard to the value of the röntgen enema in conjunction with diagnosis of these diseases. The conclusions may be briefly stated in the form of indications for barium enema study.

CONCLUSIONS

Barium enema study of the colon should be done in every case of hemorrhoids in a person over thirty-five, in all cases of chronic constipation, of suddenly developed constipation, of obscure bleeding from the bowel, of unexplained anal pruritus, in cases with a sense of weight or burning in the rectum, and finally in all cases of polyposis.

(*Continued from page* 685)

Without having it especially in mind in the allusions here and in other essays dealing with the Odyssey, tucked away in the pigeon holes of several editors, there has been disclosed what Homer was for the Greeks after him. All wisdom, law and literary art, even medicine and, we may yet see, religion found in him a master and in the Iliad and the Odyssey a court of last appeal. In the Ion of Plato's dialogue, Ion, the rhapsode, says: "Come, Socrates, see how I dress up Homer and improve him," but Socrates shows him out of his own mouth that he speaks of Homer, not from his own knowledge concerning the discourse of Homer or even concerning Homer himself, but out of the inspiration of God which Homer has transmitted to him.

I have had something to say, too, about the magic origin of the idea of drugs as exemplified in the Greek word, *pharmakos,* and perpetuated in our word for a drug store—a pharmacy, but returning to the parting scene at the house of Menelaus in Sparta and the charming Helen and the stirrup cup for Telemachus, it may be remarked in passing on to things indisputably magical there seems no reason, so far as I can make out, notwithstanding the suggestion of some commentators, to see anything magical in the posset given to the son of Odysseus. It was a hostess putting a little absinthe or vermouth or other bitters in a cocktail, but the thought we get out of the words is that an opiate in some form was an ingredient of the Homeric cup. Unlike the Iliad, in the Odyssey we get plentifully references to magical ceremonies with many features of which the study of modern primitive people has made us familiar. The Blood and the Soul (2b) I have alluded to elsewhere. We find traces of magical belief as to these among them, but Miss Harrison (6a) has, in her studies, done much to show the nature of the same trend of primitive thought as set forth in the Odyssey. Poetically it is a wonderful scene—the souls coming trooping to the pool of blood Odysseus made for them on his way to Hades that by sipping it they might again get some similitude of life (1f), and the shade of his dead mother does not recognize him at first, but when she had drunk of the blood—as Teresias did before he prophesied—she did recognize him. Incidentally in getting a vision of the physiology of the blood as the carrier of life we get the hint of the fading of the soul through loss of memory into oblivion and Homer becomes for us a religious teacher as well as a medical one. A taste of life brings back souls to consciousness like the transfusion of blood in the all but lifeless today.

Miss Harrison also quotes from the Odyssey (1g) a striking scene in which the ancient customs at the court of old Nestor of Pylos are set forth. A heifer is sacrificed to Athene. "It is a moment of high tension." The women raise their cry. "Life with all its might and sanctity is abroad. Then to make assurance doubly sure and to get the actual vehicle of life, the blood, they cut the victim's throat. 'The black blood gushed, the life had left the bones.'" We touch here the blood of life. The blood sacrifice and even the human life sacrified persisted at Athens, in all probability, to a surprisingly late era. Elsewhere in many places in the Odyssey, in the majority of places perhaps, the word sacrifice is used conventionally for the slaying of the animal for the feast, without further reference to any ritual. There seems, as Rogers remarks in a note to his translation, that the word in *The Frogs of Aristophanes* (1.757), *pharmakois,* refers to a ritual, which took the place of the blood sacrifice. There is much which could be cited from other evidence, but even here in the Odyssey it seems clear that the word *pharmakos* was once associated with much which had nothing to do with drugs just as now the word is associated with nothing that has anything to do with magic, although where we get the only unadulterated application of magic to healing in the cure of his wound, from the wild boar's tooth (1h) when Odysseus was a boy, the word *pharmakos* is not used. "With a song of healing they stayed the black blood."

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Samuel Johnson.—A supper was held at Lichfield celebrating the hundred and sixteenth anniversary of the birth of Samuel Johnson, says the *Medical Press and Circular,* at which the immortal memory of the great lexicographer was proposed by Sir Charles Russell and drunk in punch passed by servants in contemporary attire. According to some, said the speaker, Johnson was a psychasthenic. His family history was faulty, and at an early age he presented symptoms which were diagnosed as scrofula. He was therefore taken to London to be "touched" by the Queen. MacLaurin has expressed the opinion, however, that his malady was probably not scrofula, but that the glandular swellings were due to "something in his scalp." For that he lived to be seventy-five seems to show that he suffered neither from tuberculosis nor syphilis, and if his glands had really been tuberculous, more serious symptoms than mere local scarring would have been present. Boswell diagnosed his patron's nervous ailment as a sort of St. Vitus dance, which, analyzed by MacLaurin, becomes psychasthenia, and accounts for what appears to him "the utterly unbalanced character" of Johnson. To illustrate this, he cites an incident in which Johnson carried to his own house the poor woman whom he found lying in the street, and, upon finding that she was one of those wretched ones that have sunk to the lowest depths, he saw to it that she was restored to health and encouraged to live a virtuous life. "This was just the sort of kind, impulsive and senseless thing," says MacLaurin, "that would seem so utterly natural to a psychasthenic, and so utterly silly to a normal man." We prefer, declares the *Medical Press,* the portrait painted by Sir Charles Russell of the great lexicographer's common sense, his humanity and charity, and his determination to do his duty.

Teeth in Olden Times*

THE HONORABLE WILLIAM RENWICK RIDDELL, LL.D.
Toronto, Canada

(*Concluded from page* 621)

It is a matter for astonishment that this animal is not found in all these Indies except in these mountains of Peru. For I have travelled the whole Kingdom of Mexico, all the Provinces and Kingdoms of Peru and many other regions of the West Indies, and I have never seen these animals except in the mountains of the Kingdom of Peru. . . .

We took nine stones out of the pouch of the first animal we opened; they seemed to be created by the bounty of nature from the juice of these health bearing herbs, which collects in that pouch. We opened also other animals which we killed, in all of which we found stones, more or fewer according to the age. It is to be observed, too, that only the animals which feed on the mountains produce these very valuable stones; for those which take food in the plains, as they eat herbs less salubrious, so the stones in them, useful as they are, are not equal in efficacy to those which are found in animals feeding upon the mountains."

The animals are now known as llamas. The stones were believed to be valuable in all cases of poisoning, in all affections of the heart and to expel intestinal worms; they were a prophylactic against poisoned arrows and admirable in dressing wounds—all imaginary, of course, even the vermifuge.

52. *Indi eos lapides magno habent in precio, eosque in Idolorum suorum delubris, quae Guacas vocant et alia etium preciosissima quaeque offerre solent veluti aurum, argentum, gemmas, monilia, animalia et pueros.*

53. *Dentes etiam confirmat et dealbat si saepius ea ea colluantur.*

The method of preparing the tincture or infusion is most elaborately described.

SUPPLEMENTARY NOTE

It may be interesting to give Celsus' observations on the Teeth—they are to be found in Book VII, cap. XII, sec. 1 of his *De Rê Medicâ:* In cap. XI, he speaks of certain diseases of the Mouth and in cap. XII he proceeds:

"In the mouth there are also some diseases to be cured manually—in the first place sometimes teeth are loose, whether on account of the weakness of the roots or of the defect by the gums drying up. In either case a hot iron should be applied to the gums, touching them lightly, not keeping it on. The cauterized gums should be anointed with honey and washed with mead. When the ulcers begin to be clean, drying medicaments are to be applied of the repressive kind.

"If, however, toothache appears and it is determined to remove the tooth because medicaments are of no avail, it should be shaved around so that the gum separates from it—then it is to be shaken. This is to be continued until it is easily moved, for to extract an adherent tooth is attended with great danger and sometimes the jaw is displaced. It is even more dangerous in the upper jaw because it may concuss the temples and eyes. Then the tooth is to be taken hold of by the hand if possible, if not, by the forceps (forfice) and if it is corroded, the cavity is previously to be filled with lint or well fitted lead so that it will not break under the forceps. The forceps must be drawn straight up lest, the root being inclined the fragile bone in which the tooth is fixed be broken, one side or the other; consequently danger is never absent in the operation at all events in the case of short teeth which have roots almost longer. For often where the forceps cannot seize the tooth or does seize it without effect, it seizes and breaks the bone of the gum. Where there is an excess of haemorrhage, one may know that something has been broken off the bone. Accordingly the shell should be examined with the probe (speculum) and drawn with the forceps (vulsella). If this is unsuccessful the gum should be incised until the loose shell of the bone is seized.

"If this is not done at once the jaw hardens externally, so that it is not possible to open the mouth. A hot cataplasm of flour and fig should be applied until pus is excited, then the gum should be incised.

"It is to be noted that pus flows profusely from a broken bone—so that even then it is proper to extract—sometimes indeed, from an injury of this kind a fistula makes its appearance which must be got rid of.

"A scabrous tooth of which part is black is to be scraped and anointed with roseleaves powdered to which a fourth part of gallnut and another of myrrh are added. Sour wine is to be held in the mouth frequently, the head is to be covered, much walking, exercise and friction of the head had, while acrid food is not to be used.

"If any teeth are loose from a blow or other accident, they are to be tied to others which hold fast, repressives are to be held in the mouth, such as wine in which pomegranate rind has been boiled or into which hot gallnuts have been thrown.

"If, again, in children one tooth grows out before that which should fall first, has disappeared, it should be drawn clean out: while the one which is produced in place of the former, should be pressed daily with the finger till it arrives at the proper size.

"Whenever the root is left after the tooth is drawn it should be extracted with that kind of forceps the Greeks call *rhizagra*" (that is the "Punch" formerly used for extracting roots of teeth).

About the last place one would expect to find any tooth remedies is a treatise on Vipers. But in the celebrated work of Marcus Aurelius Severinus, *Vipera Pythia . . . De Natura Veneno Medecina Demonstrationes et Experimenta Nova,* published at Padua, 1651, I read: "Conrad Tigurinus in his work on Serpents adds that the application of a viper's tooth elides toothache: also Pliny in Lib. 30, Cap. 5, alleges dentation to be promoted by vipers' teeth being attached to the infant. So Ponsettus believes pain in the teeth of adults to be relieved by tying the upper teeth of the enhydrus to the upper teeth of the patient, the lower to the lower. Moreover to scarify the aching teeth of men around with the largest tooth of the male white enhydrus will effect a cure," p. 359.

The word *enhydrus* is accurately *enhydris* literally transcribed from the Greek; Herodotus uses *enhydris* of the otter; lib. ii, 72; iv, 109: but others use the word of the watersnake. Pliny is the only classical Latin writer who has the word at all—he employs it for the watersnake.

In his *Naturalis Historia,* lib. XXX, 3, 8, he says: Moreover, for pains of the teeth some say the ashes of the heads without the flesh of dogs that have died of rabies is a sovereign remedy dropped with cyprus-oil into the ear on the side of the aching teeth. The largest, left tooth of a dog, the aching tooth being circumscribed; or the bone from the back of a dragon (*draco*) or of an *enhydris*—this is a male white serpent—they circumscarify with the largest tooth of this—they rinse the canine teeth with wine reduced to half its volume by boiling. The teeth are scarified with the bones of the lizard (lacerta) taken from its forehead in the full of the moon so that they do not touch the ground. . . . the ash of dogs applied with honey assists the slow dentition of children: a dentifrice is made in the same way. For hollow teeth the ash of mouse dung is inserted or the dried liver of lizards. If the heart of a snake is eaten or even applied it is considered effective. There are some who direct to eat a mouse twice a month and so avoid aches. Earthworms boiled in oil and dropped into the ear on the side of the toothache give relief—the ash of the same applied to corroded teeth makes them fall out easily; applied as an unguent it helps aching sound teeth—it should be burned in an earthenware vessel (testa). It is advantageous too to wash the teeth with a decoction of mulberry root in squill-vinegar. Then that little worm which is found in the plant called Venus' Lip inserted in the cavities of teeth is very helpful. . . . and bugs from the mallow are dropped into the ears with oil of roses. The fine sand which is found in snail-shells inserted in the cavities of teeth, stops the pain immediately. The ash of empty snailshells with myrrh helps the gums—the ash of a serpent burnt with salt in a jar along

*Read before the Academy of Dentistry, Toronto.

with oil of rose (is) dropped into the ear on the opposite side. The cast off skin of a snake heated with oil and pine-tar is dropped into either ear; some add frankincense and roseoil. This same preparation inserted in the cavities make the teeth come out without difficulty. I myself think it useless to speak of white snakes sloughing the membrane at the time of the rising of the Dog Star as that is not seen in Italy and it is much less credible that in warm regions this sloughing is delayed so late, and indeed the cast-off skin aged with wax they say draw the teeth quickly. And the tooth of snakes bound on mitigates the pain. There are some who believe that a spider caught with the left hand and ground with rose oil dropped into the ear on the same side is valuable." (The words I translate spider are *araneum animal ipsum;* they may mean the shrewmouse). . . .

"They say that the taste in the mouth is improved if the teeth are rubbed with mouseash mixed with honey; some mix the roots of fennel. If the teeth are scraped with a vulture feather, the breath is made sour—while to do the same with a porcupine quill tends to firmness. . . ."

Pliny in another passage, *Nat. Hist.,* lib. xxxii, c. 7, 26, says:

"Toothache is relieved by the gums being scarified with the bones of the seadragon: the decoction of the brain of a puppy (canicula) in oil and applied so that the teeth are washed with it once a year. Moreover to scarify the gums with the root of parsnip is very useful in toothache. That is triturated and anointed with white hellebore and it extracts the teeth without trouble. The ash of salt fish burned in an earthern vessel added to powdered marble is among the remedies; and old tunny fish burned in a new vessel, then triturated is excellent for toothache. They say that the backbones of all kinds of salt fish burned, triturated and unguented are equally beneficial—and frogs are to be boiled one in a half pint (*hemina*) of vinegar, the teeth washed with the fluid and the fluid kept in the mouth. If squeamishness is an obstacle, Sallustius Dionysius used to hang them up by the hind legs so that the virus would flow out of their mouths into hot vinegar—that he would do with many frogs—he gave frogs to those of stronger stomachs to eat with the broth. They believe that the maxillary teeth (the molars) are particularly healed in this way and loose ones made firm by the said vinegar. For that purpose some macerate the bodies of two frogs, the legs being cut off, in half pint of wine *dried,* the loose teeth to be washed with it. Others attach all of them to the maxillary —others again make a decoction of ten in three quarts of vinegar boiled down to a third, to stabilize the loose teeth. Then, too, the hearts of thirty-six frogs are decocted in a quart of oil under a potlid (i. e. in a covered pot) that this may be poured into the ear, for an aching jaw. Others apply to the teeth the liver of a frog, decocted and triturated with honey. All the above is more efficacious if marine frogs are used. If they are carious and fetid they throw a hundred of them into an oven to be dried during the night; then a sufficient quantity of salt is added and this is used for rubbing. The enhydris is a snake living in water and so called by the Greeks. They scarify the gums with four upper teeth of this snake in pains of the upper teeth, with the lower in pains of the lower—some are content with the canine tooth of them. They use, too, the ash of crabs; and the ash of mice is a dentifrice."

Sextus Plato, *De Cane,* ix, 24, says: "For toothache burn the tooth of a dog, decoct the ash in half a pint of wine, and gargle with it—a cure will be effected." In the same work, ix, 26, he says: "That the teeth may grow without pain, burn the tooth of a dog, triturate with honey and rub the gums firmly."

Habderrahmanus Aegyptius is said to have directed: "What is called the canine tooth of a dog appended to the neck of a child whose teeth have not yet appeared makes their eruption easy without any pain or injury." Delphin Ed. Plin. *Nat. Hist.,* vol. vii, p. 4080 note(d).

Quintus Serenus, c. 15, p. 314, says: "If by any chance you complain of corroded teeth burn mouse dung and put it into the gaping openings—the powder of earthworms roasted is also helpful." Marcellus Empiricus, Plinius Valerianus, Galen and others agree in this.

Marcus Aurelius Severinus was born in Calabria in 1580 and died at Naples in 1656—he was first a lawyer, then a medical man: he was fond of trepanning and the actual cautery and was one of the first to describe diphtheria. His fame was so great as a professor of medicine as to attract a large number of students to Naples—he was a daring and harsh operator.

"Finally and in conclusion"—the celebrated Franciscan Friar, mathematician and botanist of note, Louis Feuillée, in his sumptuous quarto published in Paris, 1725, *Journal des Observations Physiques, Mathematiques et Botaniques,* of what he saw in Chile and Peru, tells us of two plants used by the Natives dentally.

Chalo Origani folio. "The natives of this country (Chile) use this plant in severe toothache, washing the mouth with a decoction."

Geranium Columbinum perenne flore purpureo, Vulgo *Core-Core.*

"This plant is admirable for relieving pains of the teeth: the Indians have the root boiled in ordinary water and when they have toothache, they rinse the mouth with it and feel themselves relieved at once; it also has the property of hardening the gums; that is the reason that those of advanced age make great use of it.

I almost forgot our own Samuel Thomson, the founder of the last formal System of Medicine, the Thomsonian or Botanical School which had great vogue in the second quarter of the last century and is not quite dead yet, though I believe it no longer has a College. Thomson with all his fondness for Lobelia and Capsicum had his own share of good sound "horse sense" and if he did not cure many he saved many from being killed *secundum artem* by the Regulars.

For toothache, Thomson, or at least his followers (for the copy of his little book in my possession printed at Hamilton, Canada West, in 1833 is silent on the matter) advised to "chew the xanthoxylum or tooth bark: a piece the size of the finger nail is sufficient at a time. Repeat till the pain ceases —as effectual as anything of the stimulating kind or No. 6 put in the tooth." Thomson's No. 6 was about the same as Tr. Myrrh. Co. and contained Myrrh, Capsicum, and Alcohol, sometimes Camphor and Turpentine.

Contributors to the Science of Medicine

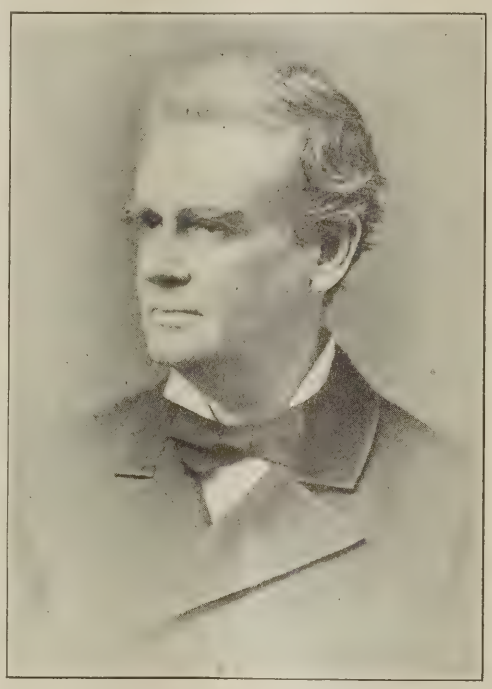
J. Marion Sims

J. Marion Sims was one of the very great, indeed the greatest of the pioneer surgeons of this country. He may be linked with William Beaumont and Ephraim McDowell, but he went further than either of these original investigators and surgeons, although it is only fair to say that he had greater opportunities.

James Marion Sims was born in Lancaster County, South Carolina, on January 25, 1813. His ancestors, on his father's side, were of the English colonists of Virginia, and on his mother's side he was of Scotch-Irish origin. They were all tillers of the soil. He graduated in arts from the College of South Carolina and studied medicine in the office of Dr. B. C. Jones at Lancaster, a small village in Lancaster County. He afterwards attended lectures at the medical college at Charlestown, South Carolina, but received his diploma from the Jefferson Medical Col-

lege of Philadelphia. When he had graduated he returned to Lancaster to practise, but meeting with little success remained there only a short time and removed to Mount Meigs, Alabama, where he remained about two years. In 1886 he returned to Lancaster to marry Eliza Theresa Jones. After his marriage he came back to Mount Meigs but left for Macon County in 1837 living near a small village, Cross Keys by name. Thence he came to Montgomery, a good sized town, with his wife and two children and settled there for several years. Here he had the opportunity of displaying his gift for surgery and operated largely for club foot and cross eyes.

He was a remarkably skilful surgeon and soon established his reputation as such and it was not long before he had one of the largest surgical practices in the state of Alabama. He was, moreover, greatly beloved and immensely popular. He was active in the formation of a medical society and performed almost all the important surgical operations known to the science of that day. One of the most important operations Dr. Sims did at this early stage of his career as a surgeon was that for cleft palate which he performed with extraordinary success and of which he wrote an account in the *Dental Journal*. At this time on the advice of a friend, Dr. Ames, he published accounts of all his chief surgical cases. When he had lived in Mortgomery for a year he maintained a private hospital in which to care for his surgical cases.



J. MARION SIMS, M.D

It was while he was in Montgomery, and after he had acquired a great local reputation as a surgeon, that he began to work out the vaginal speculum, by the invention of which his name is best known and which was first termed the duckbill speculum. However, before this he made what he thought was his first great discovery. He was called in to see an infant suffering from trismus narcentium, or lockjaw. Dr. Sims, after examining the baby carefully, concluded that the condition was due to mechanical pressure on the base of the brain, caused by the dislocation of the occipital bone brought about by the child lying on its back. The child died and a postmortem was made, from the outcome of which his view was confirmed at least to his own satisfaction.

Dr. Sims's doctrines in respect to the pathology and treatment of trismus nascentium were not accepted generally. In January, 1884, Dr. J. F. Hartigan, of Washington, published an article in the *American Journal of the Medical Sciences,* entitled Trismus Nascentium; Its History, Cause, Prevention and Cure. The article contained the report of two hundred and twenty-nine cases and with regard to diagnosis set forth the theory of causation which the author found had been advanced over thirty years before by Dr. J. Marion Sims, then of Alabama.

It was shortly after this that he made uterine surgery his special study, and restricted his hospital solely to females and to such cases in uterine surgery as were best calculated to test the value of the aforementioned speculum. His interest was first aroused in vesicovaginal fistula by a case he attended. Soon after he was called in two similar cases and he became so intensely concerned with the question of treatment of all uterine disorders and vesicovaginal fistulæ in particular, that he induced his medical friends to hunt up for him difficult cases of uterine disease, which had resisted treatment, and especially of that loathsome condition, vesicovaginal fistula, which had ever been the stumbling block of surgery.

The district in which he lived provided many opportunities for investigating uterine disorders as they abounded among the negro population. Alabama was a slave state, and the negro women were attended usually in their confinements by ignorant midwives of their own color. His efforts were encouraging from the outset and he pursued his path undeterred by difficulties or failures. He intended to reach his goal if indomitable will and unfailing perseverance would get him there. He worked on and on, sometimes performing dozens of operations on the same patient until at last his end was gained. In Dr. Sims's autobiography a chapter is given up to the tale of his experimental operations and of his final success with the speculum.

During all this time he was thinking out methods and plans of procedure for his operations, and at the same time was inventing instruments and appliances as aids to his speculum. All this happened between 1845 and 1849 and although his life had been strenuous, yet from the consciousness that he had greatly succeeded in his ambition to save women from suffering added to the fact that he was prosperous and that his domestic life was ideal he was contented and happy.

The first blow that came was the death of his second son, and then six weeks after his success with vesicovaginal fistula he collapsed and for some time he traveled from resort to resort in the endeavor to regain health. In 1851 Dr. Sims, who was convinced that the climate of Alabama did not suit him, bought a house at 89 Madison Avenue, New York, and for a considerable time made little or no headway. Then the idea struck him of establishing a woman's hospital and after encountering almost incredible difficulties succeeded in doing so. This is the description the founder gave of it in his autobiography: "The Woman's Hospital from the day it was opened had no friends among the leading hospital men. I was called a quack and a humbug, and the hospital

pronounced a fraud. Still it went on with its work. Its wards were open to any doctor that cared to come, and the operations performed there were seen by most of the leading men of the city, and by many others from different parts of the country."

Finally funds for a new building were raised and the woman's hospital was built in exactly the way that its founder desired. As said before, the hospital was established under quite extraordinary difficulties and opposition, as is so frequently the case when prejudice and tradition conflicts with new views. This success in overcoming the hostility, jealousy and pettiness of others was a great tribute to his powers of magnetism and to his untiring energy.

In 1861 he paid his first visit to Europe; he landed at Queenstown and went to Dublin where he had a warm welcome from his Irish brethren. He then journeyed by way of Belfast to Edinburgh where he was received with enthusiasm by Simpson, Syme, Christison and Matthews Duncan. Of this galaxy of talent Sims was most greatly impressed by Syme. Although he had seen all the great surgeons operate in America, in London and Paris he had never seen such an operator as Syme. In London, Sims was received as cordially as elsewhere, and he was called upon immediately to operate on a case of vesicovaginal fistula at the Samaritan Hospital. He arrived in Paris in the fall of 1861 and was invited to operate in a case of vesicovaginal fistula, and despite the fact that the case was a bad one and that the operation was performed under extremely unfavorable conditions, it was completely successful. After doing the same operation in several Paris hospitals at the request of the King of Belgium, Sims performed three operations in Brussels. He had an immense success in Paris, and in connection with an operation he did there in which the patient nearly died from chloroform narcosis he delivered himself of some very apt comments on the relative value of chloroform and ether. He said, "Chloroform is delicious and dangerous; ether is disagreeable and safe in purely surgical cases."

When he returned to America in December, 1861, his countrymen were in the midst of the Civil War, and he returned with his family to Paris in the midsummer of 1862, where he found that the work he had done there in the previous summer had given him such a reputation that he had no trouble whatever in making a good income. Among other things, he became physician to the Duchess of Hamilton and in 1863 went with her to Baden-Baden to spend the summer. While there he wrote a book entitled *Clinical Notes on Uterine Surgery*. In his own words, "It was so radical and revolutionary in all the methods adopted that the profession did not at first readily accept its teachings, but in a few years it completely revolutionized the subject of gynecology" and he went on to say, "Before that time there was not a professorship of gynecology, worthy of the name, connected with any of our medical schools, and now we have professorships of this department in every medical school in the country, and, indeed, throughout the civilized world." In his memoir of Dr. Sims, the well known surgeon, Dr. Thomas Addis Emmet, says of the book, "Its publication was the turning point of modern gynecology, or, more strictly speaking, American gynecology, of which he may be justly termed the father."

In 1863 the Emperor of the French, Napoleon III, sent for Dr. Sims to consult him as to the health of the Empress, and for a few weeks he had professional supervision of her health. After 1863 Dr. Sims was resident in London for a time. In 1870, while in Paris, he aided in organizing the Anglo-American Ambulance Corps, for service in the French army in the field during the Franco-Prussian War. He was surgeon in chief of the corps, with a staff of seven American and eight English surgeons. He arrived on the field of Sedan just before the battle. Dr. Sims remained at Sedan a little over a month, when he resigned his position returning to this country in January, 1872. He was appointed a member of the Board of Surgeons of the Woman's Hospital and resigned in December, 1874, owing to differences with the board of management. The American Medical Association elected him its president in 1876. After a visit to the South and the place of his birth, he returned to New York and in the fall of 1877 went back with his family to Paris. He was made president of the American Gynecological Society in 1880. Dr. Sims's health was never robust, and yet in spite of his delicate physique he had remarkable vital powers and was capable of prolonged physical exertion. While in New York in the winter of 1881, he was attacked with pneumonia which nearly proved fatal. In speaking of it he was wont to say, "But for that attack of pneumonia I would probably have lived to the age of ninety."

Early in 1882 he again went to Europe and remained in Paris until August, 1883, when he returned to New York. In October he bought a plot for a house in Washington, the title deeds of which were executed but three days before his death. He had intended to sail for Southern Europe on November 8th, to escape the American winter, but was persuaded by his friends to defer his departure until the seventeenth of that month in order to perform a delicate and difficult operation on the wife of a prominent citizen of New York. On the night of November 12th, returning from a visit to this patient, he caught a chill and died on November 13th.

The fame of Marion Sims rests upon his treatment and cure of vesicovaginal fistula and upon his improvements in the treatment of uterine disorders generally. He revolutionized gynecology. His name will be carried down the ages as the inventor of the speculum which bears his name.

In the words of his friend, Dr. W. O. Baldwin, "Gynecology today would not deserve the name of a separate and cultivated science, but for the light which Sims's speculum and the principles involved in it have thrown upon it. It has been to diseases of the womb what the printing press is to civilization, what the compass is to the mariner, what steam is to navigation, what the telescope is to astronomy, and grander than the telescope because it was the work of one man. Those great philosophers Galileo, Gregory, Herschel and Newton, all claim and deserve the honor for successive parts of the telescope. Sims alone discovered and invented the speculum and like Minerva from the brain of Jupiter, it sprang from his hands alone, full fledged and perfect when he gave it to the world."

Editorial Articles

INSANITY AND CRIME

The most glaring feature of human life is the vast amount of mental disease and its concomitant, crime. What is out of sight is out of mind and because criminals and the insane are isolated to a large degree we forget their hideous number, and because our tax bills are not itemized we do not realize the heavy burden these unfortunates place upon their fellows. Between international insanity, war, and individual mental derangement we are well nigh bankrupt. There seems to be little sign of improvement, and, while much is being done by private agencies wtih a view to getting at fundamental causes, this is not half enough.

The public suffers from mental disease more than the individual, and the public should finance and further the best of research in this direction. We have governmental bureaus for the study of diseases of plants and of animals, also the diseases of man that are of physical origin, but there is no adequate means of getting at the etiology and prophylaxis of crime and insanity.

These are days of economy in government activities, and many bureaus are sorely pinched for funds, but there is no economy in not trying to do away with the enormous wasters of our public resources. Mental health is purchasable to a degree, and there is nothing finer for which we can spend our cash, while the financial return on so wise an investment should be most extraordinary.

THE NEW SURGERY

Electrosurgery has made very considerable progress since the method was first instituted. Nagelschmidt, if he was not the originator of surgical diathermy was, at any rate, one of the earliest pioneers. He had practised diathermy for some time when he was invited in 1910 to give a demonstration of surgical diathermy at St. Bartholomew's Hospital in London. He there treated three surgical cases.

Dr. Albert Tyler, of Omaha, was one of the first in this country to use the method and has confined treatment principally to diseases of the face and mouth and says he has treated cases of malignant tumor successfully. One of the first exponents of surgical diathermy is Gustav Kolischer, of Chicago, who has treated many cases of malignant tumor with satisfactory results by electrocoagulation.

Mr. J. E. McDonagh is one of the chief advocates of this theory of disease and its treatment, expressing these opinions in *The Nature of Disease* published some months ago. However, by no means all those surgeons who practise electrosurgery believe this theory, but they do believe in the efficacy of such treatment in suitable cases. At the meeting of the American Academy of Physiotherapy held in Atlantic City, May 25 and 26, 1925, Howard A. Kelly, of Baltimore, read a paper on the new surgery, and William D. Mcfee, of Boston, one on electrocoagulation in surgery. These papers were published in this JOURNAL on July 1st. Kelly, who has had much experience with the new surgery, namely, bipolar electrocoagulation and monopolar desiccation of William A. Clark and electric cutting needle of George A. Wyeth. Kelly first describes the acusector, the needle functioning as a knife and actually separating tissues as neatly and readily as a scalpel. He describes the technic of the various operations for which the acusector can be employed, and points out where care must be taken in its use.

The advantages of bloodless surgery are summarized as follows: There is at the disposal of surgeons a set of new agents destined to remodel surgical technic over a large field. 1. The new electric methods are not simple substitutes or alternative methods of doing what we have done equally well by other procedures. 2. These methods are not to be learned completely in a week or a year. They call for careful attention to a new technic, for discriminating judgment in their application, and for increasing boldness with a growing experience. The concept is new. 3. They will succeed often where surgery and radium have failed, although they do not exclude or wholly supplant either. 4. In operating by these new methods the motto might well be stated as "hands off," as there is so little fingering of the tissues. 5. Not least of the advantages of the new procedures are those of lessening hemorrhage, a more rapid disposal of diseased and infected tissues and a considerable shortening of the duration of the operation. 6. A larger percentage of the cases can be treated as ambulatory, after having been treated under local or short gas anesthesia. 7. Pain is lessened, owing to the destruction of the sensory nerves. 8. Healing is better.

There is no doubt, however, that if, as Kelly says, the allegations in his paper are true they fully justify the title "new surgery." It is to be hoped that further experience will substantiate his claims and until that time arrives it will be well to retain an open mind. It must not be forgotten that the well known Balti-

more surgeon acknowledges that both skill, judgment and experience are necessary to manipulate the acusector with safety and that therefore the new concept must be thoroughly studied and understood and a technic mastered before a surgeon undertakes a bloodless operation.

THE RELATIONSHIP OF ACIDOSIS AND ACETONEMIA TO SEASICKNESS

While the basic cause of seasickness may be largely psychological there are other and physical reasons which enter into its causation. For example, if a person suffers from gastrointestinal troubles it would seem reasonable to assume that such persons are more apt to be victims of *mal de mer* than those whose organs of digestion, assimilation and excretion are in good working order. Moreover, some people appear to have a certain idiosyncrasy to severe gastric disturbances when on the ocean. In the *British Medical Journal,* January 17, 1925, Dr. B. Sidney Jones, Surgeon R. M. S. *Aquitania,* has an interesting and suggestive communication with regard to seasickness. Dr. Jones has been going to sea off and on for thirty-one years but it is only comparatively recently that he has associated acidosis and acetonemia with seasickness.

The incidents which drew his attention to this possibility were the extraordinary number of cases in women in the middle or late stage of pregnancy, who, having ceased vomiting in the early months, commenced to vomit again after coming aboard, and some cases of intractable vomiting in children, when the movements of the ship were so slight as to be out of all proportion to the degree of sickness. It may be said that the children often had a previous history of cyclical vomiting. Dr. Jones's investigations during three years showed increased acid and acetone in the urine in almost all cases of apparent seasickness. In short, he has come to the conclusion that, although seasickness may not be due to these causes, the presence of acidosis and acetonemia in such a very large proportion of cases seems more than a coincidence and worthy of investigation.

Starvation is not the cause of the acetone present as some people vomit shortly after the ship sails, or even as soon as they set foot on deck. The author thinks that the sympathetic system may act on one or more of the endocrine glands, possibly the pancreas, and thus cause the fats to be broken up into these substances instead of into carbon dioxide and water, as is known to happen in diabetes.

What tends to add weight to the belief that there is a fairly close relationship between acidosis and acetonemia and seasickness is the fact that these cases, especially in children, respond very readily to alkaline treatment. Consequently, Dr. Jones concludes, investigations have shown in his practice that more than ninety-nine per cent. of cases of vomiting at sea, not due to an obvious organic lesion, have been accompanied by increased acidity and acetonemia; that the sickness clears up quickly under an intensive antacid treatment, and that it would therefore seem to follow that it is advisable to have any hyperacidity corrected before embarking.

If the investigations of the medical officer of the *Aquitania* are confirmed by further experience then seasickness can be prevented or quickly aborted.

A NEW AID IN THE DIAGNOSIS OF BRONCHOPULMONARY LESIONS INCLUDING TUBERCULOSIS

Much difficulty has been experienced in diagnosing correctly certain bronchial and pulmonary lesions. The bronchoscope has been of great aid in this direction and its potentialities and possibilities are by no means ended. In fact, the field of bronchoscopy is constantly widening. The last use to which the bronchoscope has been put is to inject lipiodol for diagnostic purposes.

Lipiodol, a preparation of iodine, is a French pharmaceutical product. Although only introduced in radiology during the past two or three years it appears already to have been a striking success and has been employed in the Royal Victoria Hospital, Montreal, to diagnose lung conditions which could not have been diagnosed satisfactorily by any other known means.

At the meeting of the New York Central Railway Surgeons, held in Montreal on October 20th and 21st, Dr. Edward Archibald, professor of surgery at McGill University, demonstrated at a clinic of the Royal Victoria Hospital on October 20th, before surgeons of this association, the diagnostic value of lipiodol. He pointed out that the object of the clinic was to lay stress on the value of this product in showing up cavities and bronchiectasis in tuberculous lungs. The histories of patients were given, on whom from two to three years previously the operation of total posterior thoracoplasty had been performed. After improvement, extending over varying periods, symptoms characterized by cough and increased sputum had recurred. The operation of thoracoplasty involving extensive rib removal, the reforming of bone, irregular outline, together with the usual considerable thickening of the pleura, is to render diagnosis of the existing condition by ordinary methods impossible. The x ray plate is so obscured that no detail of lung structure can be detected, nor is any aid to be had from physical examination, owing to the condition of the lung and the thickness of the tissue generally.

In the circumstances resort was had to injection of lipoidol by the bronchoscope. This was done by Dr. David H. Ballou, of the otolaryngological department of the Royal Victoria Hospital, who in an article in the *Canadian Medical Association Journal* describes the procedure of injection. A remarkable feature of lipoidol is that although it is a preparation of iodine it is nonirritating. As Dr. Ballou says, that it has no irritating effect is evidenced by the fact that in spite of its presence in the lung for a considerable time, as demonstrated by x rays, it produces scarcely any cough in the normal person.

Dr. Archibald and those colleagues with whom he has been experimenting with lipoidol as a diagnostic agent in obscure lung conditions are enthusiastic as to its future.

THE RELATIONSHIP OF THE MINERAL ELEMENTS OF THE BODY TO DISEASE

Evidence of the essential need for the mineral salts in the body in their proper proportions is accumulating almost every day. Of these mineral elements most is known of iodine and calcium and it is now a matter of common knowledge that if these be lacking ill health will follow.

Iodine has come to the front recently as one of the most necessary constituents of the human organism, and its deficiency as one of the most common causes of disease.

There exists more or less precise knowledge concerning the thyroid gland. It is probably the director of the endocrine system and if it fails to perform this office efficiently, the entire system suffers. Also, the smooth working of the thyroid is dependent upon its iodine content, and if this is lacking, the thyroid is unable to do those services which are essential to good health. A condition of low resistance of the tissues to disease ensues, and the system is prone to be attacked by any of a long list of diseases, many of which if not prevented from developing will assume the chronic form. Swelled glands and tonsils, little or no appetite, pallor, and listlessness are some of the symptoms which characterize a deficiency of iodine in the system in children. Simple and other forms of goitre in adolescents and adults, while in middle age rheumatism in its chronic form is perhaps the chief distinguishing marks of iodine privation.

The most sinister feature of a paucity of iodine and calcium in the system is that such a deficiency renders the subject, and the young in particular, susceptible to the infectious diseases. It is believed, and the evidence seems strong, that heart disease in children, which generally becomes permanent, is contracted frequently as the result of acute rheumatism or of another infectious disease and these infections only attack children who are peculiarly open to invasion by microbic toxins because of a deficiency of iodine in the thyroid gland. Again, in tuberculosis there is usually a negative calcium balance and it appears reasonable to presume that resistance to tuberculosis is diminished by an insufficient supply of calcium in the body.

In tuberculosis, anemia, dyspepsia, neurasthenia, rickets, dental caries, in pregnant women and in several chronic diseases there is an excessive excretion of calcium or demineralization. In nervous diseases there is a large loss of calcium. Deficiency of calcium is likely to occur in an adult urban population and, in inland districts in particular, deficiency of iodine is a common cause of malnutrition in children and of simple goitre in adolescents and adults. In many parts of this country the fact that endemic goitre is largely due to lack of iodine is fully recognized.

But there is another point to be considered in connection with this subject and that is, how is it that the iodine content of the thyroid becomes lessened and the calcium content of the body excreted too profusely. So far as the iodine supply of the thyroid is concerned, a mass of evidence goes to show that intestinal toxemia is frequently the cause of the impaired functions of the thyroid.

SURGEONS OF THE STONE AGE

Among the distinguished foreign guests at the recent meeting of the American College of Surgeons in Philadelphia none was more worthy of honor than the Italian surgeon, Vittorio Putti, who in the field of arthroplastic surgery hardly knows a rival. Dr. Putti is a professor in the ancient and famous medical school of the University of Bologna, one of those Italian universities which kept the torch of medical and surgical learning burning at a time when in the rest of the world it was dead or dying.

Dr. Putti took occasion, while in Philadelphia, to point out that the men of today are slow to realize how much was known of medicine and surgery in past ages. For example, men of the stone age, that age before records of history were kept, knew how to trephine, in a rough way no doubt, but it seems that they did know how to relieve pressure on the brain by this method.

Dr. Putti went on to draw attention to the fact that there was medical teaching at Salerno as early as the ninth century. The knowledge of surgery was taken to Italy by Greek surgeons and developed by Benedictine monks. Those surgeons of a thousand years ago knew how to perform amputations, knew how to deal with fractures, and knew of many opera-

tions for relief of diseased conditions. However, since aseptic surgery had not yet come into existence, abdominal operations such as are common today were little attempted.

As for anesthesia, it was known and used centuries ago. Ether and chloroform as anesthetics are modern discoveries, but opium had been known and used as an anesthetic for hundreds of years.

Obituary.

EDWARD BENNETT BRONSON, M.D.

New York

The tragic death by fire, on November 18th, of Dr. Edward Bennett Bronson came as a great shock to his friends and colleagues in New York City. Dr. Bronson was born in Hartford, Connecticut, on June 12, 1843. He was graduated from Yale University in 1865 and took his degree in medicine at Columbia University, New York City. His line of special interest in medical science was dermatology, and he was an active member of the New York Dermatological Society and of the American Dermatological Association. He was also widely known as an able consulting physician, and at the time of his death filled this position at the New York City Hospital and at the New York Babies' Hospital. He was a Fellow of the New York Academy of Medicine, and a member of the American Medical Association. He belonged also to the New York University Club, of which he was at one time president, and to the Century Club and the Quill Club.

Dr. Bronson had always retained, in spite of his advanced years, a keen interest in his profession and prided himself in keeping up to date in his medical knowledge and in his interest in life as a whole. He had a wide and devoted circle of friends, both professional and otherwise, to whom his death comes as a heartfelt loss.

WILLIAM EMERY STUDDIFORD, M.D.

New York

Dr. William Emery Studdiford, one of the best known surgeons in this country, died on November 17th in his fifty-ninth year at his home in New York. Soon after Dr. Studdiford's return in the fall from a European trip, he suffered a heart attack, which, however, was not regarded as serious, so he continued his practice as before. A few days before his death he suffered another attack while operating at Sloane Hospital for Women, and was hurried to his home. Even then his condition was not deemed serious, so his death came as a shock.

Dr. Studdiford was born in Trenton, New Jersey, on July 4, 1867. His father was the Rev. Samuel Studdiford, who was for nearly fifty years pastor of a Presbyterian church in Trenton. The son, William, was graduated from Princeton University in 1888, and in 1891 took his master's degree at the same institution. In the same year he received his medical degree from Bellevue Medical College. After an internship at Bellevue, Dr. Studdiford became the assistant of the late Dr. William P. Lusk, and after a few years, was made assistant attending physician at Bellevue. In 1914 he became attending physician on the staff of the late Dr. E. B. Cragin, and in the same year was made professor of gynecology and obstetrics at New York University. In 1919 he succeeded Dr. Cragin as professor of gynecology and obstetrics at the College of Physicians and Surgeons, Columbia University, and as director of Sloane Hospital. During the latter years of his life he held the position of consulting gynecologist at the Presbyterian Hospital, New York City.

Dr. Studdiford was active in his work until the very end of his life, as the fact that he was stricken while operating testifies. He was a man of unusual strength of character, the broadest human sympathies, and of great personal charm, so his circle of friends was a very wide one. His work was known not only in his own land but was also recognized abroad. He was indeed a master surgeon.

GEORGE W. CRARY, M.D.

New York

The death of Dr. George W. Crary, well known dermatologist, at his Park Avenue home, New York, on November 16th, came as a great shock to his wide circle of friends. Dr. Crary was born in Brooklyn on January 3, 1864. He was graduated from the Brooklyn Polytechnic Institute in 1881 and from the Medical Department of Columbia University in 1885.

His first professional position was that of house surgeon in Bellevue Hospital. Later he was made assistant demonstrator in anatomy at Columbia and assistant attending surgeon at Roosevelt Hospital and was gaining recognition in these fields when he was stricken with paralysis after an attack of pneumonia, which deprived him of the use of one of his arms. By no means discouraged by this apparent serious setback to his work, Dr. Crary went to Europe and spent three years studying dermatology in the hospitals of Berlin and Vienna, and upon his return to this country was made attending dermatologist at Cornell Medical College. He was consulting dermatologist at the New York Lying-in Hospital from 1903-1905, and had been consulting dermatologist at the General Memorial Hospital since 1903; at the Lincoln Hospital since 1907, and at the New York Infant Asylum since 1908.

Dr. Crary was a member of the Manhattan Dermatological Society, a fellow of the New York Academy of Medicine, a member of the Medical Association of the County of New York, the Medical Association of Greater New York, the Society of Social and Moral Prophylaxis, the Physicans' Mutual Aid Society, the American Forestry Association, the New York Forestry Association, the Metropolitan Museum of Art, and other organizations, the character of his memberships and the active work which he contributed to all testifying to the breadth and inclusiveness of his many interests. He was extremely fond of outdoor life and camping, and was an authority on nature study and biology, as well as medical science.

The Vichy Mineral Springs

CHARLES GREENE CUMSTON, M.D.

Geneva, Switzerland

For more than a quarter of a century I have sent patients suffering from stomach and liver disorders to Vichy, and the results obtained by treatment with these waters have, on the whole, been extremely satisfactory. Consequently, when I myself became the subject of diabetes, it was only natural that I should take a cure there, which I did this summer.

The indications for cures at this resort may be conveniently tabulated as follows:

GASTRIC AFFECTIONS

Primary types.—Hyperpepsia; intermittent hyperchlorhydria; hypopepsia; apepsia and neuromotility disturbances of the stomach.

Secondary types.—Arthritic and toxic (gastrohepatic) dyspepsias; dyspepsia dependent upon enteroptosis.

LIVER AFFECTIONS

All types of hepatic congestive processes and biliary lithiasis. The congestive phase of cirrhosis—before the cachectic phase is reached—is also an indication for a cure.

TROPICAL DISEASES

From personal experience I am convinced that the waters of Vichy are absolutely indicated in malaria and other tropical diseases involving the hepatic gland, the diabetes of obese subjects, arthritic obesity, uricemia and certain forms of gout.

Reference will not be made here to the medicinal uses of each of the several springs at Vichy as this subject is within the realm of the specialist, which I am not. What is to follow is based on my personal experience.

ACTION OF WATERS ON DIGESTIVE TRACT

First, in reference to gastric processes it is to be remarked that Vichy, like all other similar spas, is not indicated in all stomach diseases. In cases of gastric or duodenal ulcer in the active stage the patients must never be sent there, while it is questionable whether or not hyperchlorhydria is benefited. For all other gastric lesions are unquestionably relieved by these waters. The therapeutic effects of the waters are due to factors other than chemical and in a short time the stomach is brought into a state of rest, digestion is accelerated, fermentation neutralized and pain and nausea alleviated. The waters are easily assimilated with the result that all tissues and secretions are stimulated, the gastric glandular system tend to become normal, hence the secretion of the gastric juices is promoted.

Arthritic dyspepsia dependent upon an excess of urea and uric acid in the urine, and the toxic dyspepsias resulting from overeating and too free indulgence in alcohol, are especially influenced by the waters.

CHOLAGOGUE PROPERTY OF WATERS

Coming now to hepatic affections, let it first be said that Vichy waters have a very potent action on the secretion of bile. This cholagogue property is due to alkalization of the entire economy by their use, thus increasing the fluidity of the bile. The hepatic cell metabolism is stimulated, hence toxic matter is either

FIG. 1.—Massage under hot water spray.

FIG. 2.—Massaging hot water douche under water.

eliminated or destroyed. It is hardly necessary to say that in order to obtain really good effects, patients should be sent before the physiological integrity of the hepatic cell has been destroyed by the morbid process, otherwise—as with any other therapeutic measures—no good will result.

From my own clinical experience I have been able unhesitatingly to say that in chronic cholecystitis, the diabetes of fat subjects (arthritics), hepatic congestion, the result of overfeeding or the overindulgence in alcoholic drinks, and in the early phases of cirrhosis, the cures at Vichy are unsurpassed by any other spa on the continent. I am likewise inclined to suspect that in certain forms of biliary lithiasis the patients may derive benefit at this spa, and I have frequently ordered cures at Vichy in postoperative cases of gallstones and various forms of surgical cholecystitis with clearly excellent results.

Dr. G. Monod, of Vichy, informed me that if the nature of the treatment carried out there was better understood by the profession at large, uricemic patients and those suffering from various forms of gout would be sent there, much to their advantage.

Every type of bath and percussion douche is to be found in Vichy and everyone knows the therapeutic value of the douche in all its various forms. Reference is especially to be made of massage under water by means of a hot douche (from 36° to 40° C.) which is directed over the epigastric region for ten or twelve minutes—a most delightful therapeutic procedure, which I can vouch for from personal experience. The force of the douche gives a soft massage which is very efficient and not fatiguing to the patient (Fig. 1).

Another form of massage under water is depicted in Fig. 2.

MECHANOTHERAPY

Mechanotherapy is now recognized as an important adjunct to hydrotherapeutic cures and is extensively carried out. Fig. 3 gives an excellent idea of the fine plant at Vichy.

DIVERSION

One other important feature of Vichy is its beautiful parks where under their magnificent trees one can be refreshed in warm weather. It is never excessively hot there, the maximum heat in July and August varying from 80° to 84° F. And to make one's stay still more pleasant, there is a fine opera house where all that is best in music may be heard nightly in the form of opera or symphony concerts with the concourse of the best artists in Europe. There are several other theatres and music halls where mental diversion of a lighter kind may be obtained, and are not to be despised, because many patients are mentally depressed and amusement is often essential in medical treatment.

The mineral waters of Vichy were well known in the time of the Romans. They afterwards lost their celebrity and did not regain it till the seventeenth century, in the latter half of which they were visited and written of by Madame De Sevigné. At the present time Vichy is one of the best known and perhaps the most frequented watering place in France.

FIG. 3.—The Vichy Institute of Mechanotherapy.

INTERNATIONAL ASSOCIATION OF UNIVERSITY TEACHERS OF MEDICAL ROENTGENOLOGY

A survey of the development of medical science during the World War in the most prominent countries has given some very astonishing results. The astonishment was especially marked in the more recent röntgenology, the second developmental period of which occurred during this time of the complete separation of the ways. The paths it has followed have led to widely divergent directions—much further than merely indifferent variations of opinion. As a result, there have developed the most contradictory views and measures and it is conceivable that there should arise within the circle of this specialty the desire to know, in the first place, the stage of advancement of röntgenology in the different countries, and then to inaugurate an exchange of experiences and ideas on questions of investigation and study.

For this purpose a loose International Association of University Teachers of Röntgenology, consisting of a moderate number of suitable members, seems proper. Such a proposal, originated by a Viennese committee of the undersigned, found growing favor. Numerous replies to circulars have been received and valuable material contributed up to the present time by sixty-one academic teachers of röntgenology, or of this branch and a clinical specialty, make possible a preliminary survey. These sixty-one ordinary members include:

Professors in ordinary of medical röntgenology	11
Professors in ordinary of medical röntgenology and electrotherapy and physiotherapy, respectively	6
Professors in extraordinary of medical röntgenology and clinical medicine and surgery, respectively	3
Associates in medical röntgenology	17
Associates in medical röntgenology and clinical medicine or surgery	2
Associates in röntgenology and radiology	3
Associates in medical röntgenology and electrotherapy, and possibly physiotherapy	6
Lecturer in medical röntgenology	1
Total	61

University instruction in this specialty has advanced to different stages, as is shown by the following table, which includes only those countries from which complete information is available:

	I	*II*	*III*
Countries	*No. University Lectures on only (pure) Medical Radiology*	*No. Medical Faculties or Medical Schools*	*Proportion (in each school)*
Germany	5	23	0.2 (5:23)
Jugoslavia ..	1	2	0.5 (1:2)
Austria	12	3	4.0 (12:3)
Roumania ...	1	3	0.3 (1:3)
Russia	12	12	1.0 (2:3)
Switzerland .	2	3	1.7 (2:3)
Czechoslovakia	4	3	1.3 (4:3)
Hungary ...	2	4	0.5 (2:4)

Italy, the United States, and other countries show especially high figures, but the complete material has not as yet been furnished to the association. The differences in the general interest in this specialty are slight, but everywhere, as with us, it is extraordinarily marked and beyond all expectations.

Those teachers of röntgenology who have not been reached by our call or who have not as yet joined us, we herewith invite to suitable cooperation. This association will also include numerous advisory members.

With this short report and with the detailed proceedings to be published in the *Fortschritten auf dem Gebiete der Röntgenstrahlen,* as well as in the röntgenographic archives of all languages (membership list, etc.), the association hopes to render assistance by the extension of the present state of the specialty, to approach its aims, and thereby to cooperate toward the reunion of minds, which is one of the purposes of this association.

The Directing Committee,
Haudek, Holzknecht, Kienböck, Weber.

News Items.

Harvey Lecture.—Dr. Warren H. Lewis, professor of physiological anatomy, Johns Hopkins Medical School, will deliver the third Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, December 12th, 1925, at eight-thirty. His subject will be On the Origin of Macrophages and Epithelioid Cells, from Mononuclear Blood Cells.

Food and Health Exhibit.—The first exposition to be held in the new Madison Square Garden will be the third annual Health and Food Exposition, opening December 14th. The New York City Health Department will demonstrate the method of keeping the city's supply of oysters pure, and it is sponsoring an exhibit of the latest surgical, medical and sanitary equipment of the city's hospitals, which will be explained to the public by nurses and physicians.

Phonograph Records of Heart Murmurs.—An agreement has been made between Dr. Richard C. Cabot, of Harvard University Medical School, the Columbia Phonograph Company, and the Bell Telephone Company, whereby a set of phonograph records will be prepared, showing the murmurs characteristic in all heart lesions. An electrical stethoscope developed by the Bell Telephone Company eliminates by means of a series of electrical filters the heavy sounds of the heart beats which mask the more delicate murmurs upon which diagnosis depends.

United Hospital Fund.—This organization is conducting a campaign to raise one million dollars for charity work the coming year in the fifty-seven hospitals which are its members. The Fund reports a total number of 3,342,500 days of hospital treatment given during the last year, of which 1,563,650 days were free. In addition to hospital care, a total of 720,000 persons were treated in the clinics and dispensaries of the group, and 42,000 ambulance calls were made. To meet this cost, contributions were received from the public amounting to $544,859, and the endowment fund was brought up to $551,675.

Personal.—Dr. George H. Bigelow has been appointed commissioner of public health of Pennsylvania; he was formerly director of the Cornell University Medical College Clinic, of New York.

Dr. Archibald Malloch, of Montreal, has been appointed librarian of the New York Academy of Medicine. Doctor Malloch is a nephew of Sir William Osler, and worked with him for many years.

Dr. Donald C. Smelzer, of the Buffalo General Hospital, Buffalo, New York; has resigned to become superintendent of the Charles T. Miller Hospital, of St. Paul, Minn.

Dr. Solomon Solis-Cohen, of Philadelphia, has been elected a member of the board of education.

Dr. Walter Taylor Dannreuther, of New York, was given a testimonial dinner at the Ritz-Carlton Hotel, in recognition of his appointment as professor of gynecology at the New York Postgraduate Medical School and Hospital.

Dr. Adolf Gundersen, of LaCrosse, Wis., one of the regents of the state university, has been honored with the Knighthood of St. Olaf, by the King of Norway.

Dr. John W. Leckie, formerly of Hazelton, Pennsylvania, is the new medical director of the West Mountain Sanatorium at Scranton.

Midwinter Session of the American Electrotherapeutic Association.—A Midwinter Session of the American Electrotherapeutic Association will be held on January 6th and 7th, 1926, at the New York Academy of Medicine, with the cooperation of the New York and Philadelphia Electrotherapeutic Societies and the New England Association for Physical Therapeutics, and will be followed on Friday, January 8th, by a day of clinical demonstration at the Reconstruction and Beekman Street Hospitals. All legally licensed physicians are invited to attend and programs can be obtained by addressing the secretary, Dr. Richard Kovacs, 223 East 68th Street, New York City.

Baltimore Medical Club of New York City.—This club, the membership of which is made up of physicians graduated from Johns Hopkins University, and other medical colleges of Baltimore, but who are practising in New York City and vicinity, will hold its semiannual dinner at the Waldorf-Astoria, on Saturday evening, December 5th. Dr. Lewellyn F. Parker, of Johns Hopkins University, will be the principal speaker. The officers of the club are Dr. James M. Hitzrot, president, Dr. David E. Hoag, vice-president, Dr. Leslie T. Gager, secretary, Dr. W. B. Pritchard, chairman of the executive committee, and Dr. L. Winfield Kohn, chairman of the entertainment committee. Graduates of any of the medical colleges of Baltimore are eligible. Tickets may be obtained from Dr. Leslie T. Gager, 128 East Sixtieth Street.

Society News and Notes.

The Medical Society of the County of New York held its annual meeting on November 23d at the Academy of Medicine. There were addresses by Dr. Wendell C. Phillips, president elect of the American Medical Association, and Dr. Nathan B. Van Etten, president of the Medical Society of the State of New York. The anniversary address was made by Rev. Cornelius Woelfkin.

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The Yorkville Medical Society held a meeting on the evening of November 16, one of the features of which was a symposium on periodic health examinations. Among speakers of the evening were Dr. Hyman Goldstein, Dr. Harlow Brooks, Dr. I. S. Wechsler, Dr. Herman O. Mosenthal and Dr. Charles R. Austrian.

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November meetings of the New York Academy of Medicine included the stated meeting on the nineteenth when the anniversary discourse was delivered by Dr. George E. Vincent, on The Doctor and the Changing Order; the Section of Genitourinary Surgery on the eighteenth, at which a symposium on gonorrhea was held; the Section of Orthopedic Surgery on November 20th at which cases were presented by Dr. William H. Irish, Dr. Elmer P. Wiegel, Dr. Leo Mayer, Dr. Charles Ogilvy and Dr. Fred H. Albee; the Section of Obstetrics and Gynecology on the twenty-fourth, when Dr. Meyer R. Robinson read a paper on An Orientation of Biomechanism, pathology and clinical phenomena of extra uterine pregnancy, based on a study of 131 cases; the Section of Larynology and Rhinology on the twenty-fifth, with papers by Dr. Harry A. Goalwin, Dr. Sidney Yankauer and Dr. Rudolph Kramer; and the Section of Historical and Cultural Medicine on the twenty-fourth, with papers on Mementoes of Charcot and the Salpétrière, by Lt.-Col. F. H. Garetson, of Washington, and The Influence of Culture on Medicine, by Dr. Gregory Zilboorg.

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The Hermann M. Biggs Memorial Lecture was given at the New York Academy of Medicine under the joint auspices of the Medical Society of the County of New York and the New York Tuberculosis and Health Association on the afternoon of November 19th. The lecturer was Dr. William H. Park, Director of Laboratories of the New York City Department of Health.

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The American Prison Association held its annual meeting November 7th-14th in Jackson, Miss. One of the features of the meeting was the special attention given to the problem of prison labor, a subject of particular interest just at present in view of the intensive study of the question being carried on by the U. S. Department of Commerce. Another interesting feature was the reading of reports from delegates to the International Prison Congress in order to acquaint those present with the work being done in other countries.

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The Eastern Medical Society met at the New York Academy of Medicine on November 13th. The paper of the evening was read by Dr. George W. Crile, of Cleveland, on New Conceptions of the Rehabilitation and Conservation of the Bad Risk Patient.

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The Association of Italian Physicians in America met on the same date at the Academy. Dr. Angelo M. Sala read a paper on Cardiovascular Syphilis, and Dr. Salvator Di Palma one on Interstitial Tubal Pregnancy.

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The New York Society for the Relief of Orphans and Widows of Medical Men held its annual meeting at the New York Academy of Medicine on November 18th.

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And on the same evening and in the same building the Women's Medical Association of New York City met. The papers of the evening were by Dr. Leila Charlton Knox, Dr. Nancy Jenison, Dr. Helen Baldwin, Dr. Marie L. Chard, Dr. Connie Guion, and Dr. A. M. Pennell, of India.

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The meeting of the Philadelphia Academy of Medicine and Allied Sciences on November 16th was a special meeting in honor of the contributions of deceased members. The speakers were Dr. John Turner, Dr. Eugene Hinson, Dr. De Haven Hinkson and Dr. Charles C. Dorsey.

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Other important November meetings of Philadelphia societies were that of the Physiological Society on the sixteenth, at which Dr. Arman Quick, Dr. George E. Coghill, Dr. M. McCutcheon, Dr. B. Lucke, Dr. D. W. Wilson, and Dr. S. E. Kerr were the speakers; the section on otology and laryngology of the College of Physicians on the eighteenth, at which Dr. S. J. Crowe, of Johns Hopkins University was one of the principal speakers; of the section on ophthalmology on the nineteenth, at which various cases were presented; the Philadelphia Neurological Society on the nineteenth, with papers by Dr. W. B. Cadwalader, Dr. W. G. Spiller, Dr. W. J. Freeman, and Dr. S. DeW. Ludlum; and the Academy of Stomatology on the twenty-fourth, at which the address of the evening on radicular cysts was made by Dr. A. B. Vastine.

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The Interstate Postgraduate Assembly of America was held at St. Paul, October 12th-16th, inclusive.

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The British National Council for Mental Hygiene has recently been holding its second annual meeting in London. The British press reports that throughout all the speeches there was an insistent disposition to regard mental disturbances as simly one of the human illnesses which we meet during our normal pilgrimage through life. Sir Courtauld Thomson presided. Among the speakers were Sir Maurice Craig, Dr. W. A. Potts, Lord Birkenhead, Secretary of State for India, and Lord Southborough.

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Announcement has been made that, with a contribution from the Rockefeller Foundation, a complete bibliographical abstracting service, to cover the entire field of pure and applied botany and zoology, will be established in Philadelphia in the near future under the auspices of the Union of Biological Societies of America. The headquarters of the editorial staff will be the University of Pennsylvania. The abstracting will begin with the literature of 1926, and is expected to average 35,000 abstracts a year through the collaboration of biologists throughout the world.

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On Thursday, November 19th, the medical Society of the County of New York, and the New York Tuberculosis and Health Conference opened at the Hotel Biltmore, New York City, to continue through the following day. The annual dinner meeting on Friday evening closed the sessions. Among the speakers were Dr. Samuel J. Kopetsky, Dr. Wil-

liam H. Park, Dr. Edward W. Archibald, Dr. Adrian V. S. Lambert and Dr. Howard Lilianthal.

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Before the closing of the British Empire Exhibition at Wembley, the Imperial Social Hygiene Congress was held, October 5th-7th, Sir Auckland Geddes presiding. The patrons of the congress were the Right Hon. L. S. Amery, Secretary for the Dominions, the Right Hon. Neville Chamberlain, Minister of Health, Lord Willingdon, and a number of Dominion High Commissioners.

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Standing committees on the behavior problems have been appointed by the National Education Association, and the National Conference of Social Work. The former committee is under the chairmanship of Olive M. Jones, and the second under that of Graham Romeyn Taylor.

More than seven hundred delegates, representing thirty countries, attended the fourth International Medical Congress on industrial accidents and disease held at Amsterdam. Among exhibits shown was a metallic roentgen tube affording absolute protection to the operator.

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The annual dinner of the Visual Instruction Association of America was held on November 14th at the Hotel McAlpin, New York City. The speakers were Dr. C. W. Kimmins and Dr. John H. Finley and Olive M. Jones.

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Dr. S. U. Lawton lectures on Those Nerves of Ours before the Brooklyn Institute of Arts and Science on November 14th.

The sixteenth annual meeting of the National Committee for Mental Hygiene was held on November 12th at the Hotel Pennsylvania. The meeting was preceded by an informal luncheon attended by the members of the Committee, its staff, and a few invited guests.

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On Saturday, November 21st, the annual exhibition of the New York Microscopical Society was opened at the American Museum of Natural History. Hours are from 7:30 to 10:30 p. m.

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The National Academy of Sciences and the National Research Council of the United States have announced the publication of International Critical Tables of Numerical Data of Physics, Chemistry and Technology in five volumes. Edward W. Washburn is editor-in-chief. N. Ernest Dorsey and Clarence J. West associate editors, and F. R. Bichowsky and Alfons Klemenc assistant editors.

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The annual meeting of the Alumni of the Hospital for the Relief of the Ruptured and Crippled was held November 23rd-24th at the Hotel Commodore, New York. Among the speakers were Dr. T. Turner Thomas, Dr. Allen DeF. Smith, Dr. William B. Coley, Dr. Royal Whitman, Dr. William Sharpe and Dr. Arthur Krida. Operative clinics were held by Dr. Royal Whitman and Dr. Percy W. Roberts and their staffs.

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The Section of Medicine of the Buffalo Academy of Medicine met on November 11. The address of the evening on Nonsyphilitic Aortitis was made by Dr. Harlow Brooks, of New York.

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Dr. Thierry de Martel, of the Pasteur Institute of Paris, was in New York recently and visited the Bureau of Clinical Information of the Academy of Medicine with a view to getting information for the establishment of a similar bureau in Paris.

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At the recent annual meeting of the American Foundation for the Blind a letter was read from Mary Pickford to Helen Keller, announcing the former's intention of appearing as a blind girl in a picture of which part of the proceeds are to be donated to the Foundation.

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The New York Academy of Medicine has closed its exhibit of the works of Sir Thomas Browne, and has opened one of the works of Jean Martin Charcot, born on November 25, 1825. Charcot was considered the greatest neuropathologist of France and the greatest physician of his time. The exhibits includes the Academy's copies of his works, both in collected sets and separate volumes, or special editions, and the sets of periodicals which he edited during his lifetime, including the *Archives de Neurologie* (1880-03); *Archives de Physiologie* (1868-88), and *Nouvelles Incongraphies de la Salpétrière* (1888-93).

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The Travel Study Club of American Physicians has planned a "study tour" for 1926 embracing Norway, Sweden, Denmark, Germany, Switzerland, France and England. The present officers of the club are, president, Dr. Louis Livingston Seaman, of New York; vice-presidents, Dr. Fred H. Albee, of New York, Dr. Edward B. Heckel, of Pittsburgh, and Dr. John P. Lord of Omaha; secretary-treasurer, Dr. Richard Kovacs, of New York.

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One of the features of the recent meeting of the American Society for the Control of Cancer, held in New York, was the decision to call a convention of fifty cancer experts in Europe next September. Specialists from Belgium, England, France, Holland and Switzerland will cooperate with specialists from this country in formulating and establishing a basis of data and opinions for the campaign against cancer. The information so obtained will be given wide publicity.

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The thirty-eighth annual meeting of the Medical Society of the Missouri Valley was held in St. Joseph, Mo., September 30th to October 2d inclusive, the outgoing president, Dr. John W. Martin, in the chair. The program was a combination of hospital and diagnostic clinics, and symposia on the internal secretions, fractures, diseases of the heart, and other topics. The evening sessions were devoted chiefly to papers by the society's guests, among whom were Dr. D. T. Dunott, of Baltimore; Dr. V. J. O'Connor, Dr. S. R. Slaymaker, Dr. Robert H. Babcock, Dr. Karl Meyer, Dr. B. F. Lounsbury, of Chicago; Dr. Walter M. Boothby, of Rochester, Minn.; and Dr. Russell, Dr. Weingart and Dr. Connell, of Des Moines. Officers elected for the coming year were Dr. A. D. Dunn, of Omaha, president; Dr. H. W. Carle of St. Joseph, first vice-president; Dr. M. A. Tinley, of Council Bluffs, second vice-president; Dr. Charles Wood Fassett, of Kansas City, Mo.; secretary (re-elected) and Dr. Oliver C. Gebhart, of St. Joseph, treasurer.

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Dr. Archibald Malloch, of Montreal, has been appointed librarian of the New York Academy of Medicine. Dr. Malloch is a graduate of Queens University, and took his medical degree at McGill, where he also did his early professional work as resident pathologist and bacteriologist, and as intern in medicine. He served with the Canadian Red Cross and Canadian Army Medical Corps during the war, and was later Beit Fellow at Oxford. He is a member of the Royal College of Physicians, and has been filling the positions of demonstrator in medicine at McGill, assistant physician at the Royal Victoria Hospital, and assistant editor of the *Canadian Medical Association Journal.*

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At the meeting of the Medical Association of the Greater City of New York, held at the Academy of Medicine on November 16th, the subject of the evening was Surgery of the Sympathetic Nerve. Dr. Howard Lilienthal read a paper on the Influence of Cervical Sympathectomy on Angina Pectoris; The Relation of Surgery to the Vascular Sympathetic System was treated by Dr. Walter Aikman Sherwood, and Dr. Herman LeRoy von Lackum's paper was on Sympathetic Ramisectomy in Spastic Paralysis.

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At the regular meeting of the Syracuse Academy of Medicine, held on November 3d, the evening's program consisted of several case reports of unusual interest, presented by Dr. E. B. Kaple, Dr. W. W. Street, Dr. J. E. Delmonico, and Dr. M. E. Holmes.

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The cornerstone of the new building of the New York Academy of Medicine on the corner of 103rd Street and Fifth Avenue was laid with due ceremony and impressiveness, in spite of the inclement weather, on the afternoon of Friday, October 30th. The casket placed in the stone contained copies of the daily papers of that date, the coins of the realm, a copy of the constitution and bylaws of the Academy, and a list of the founders. After the spreading of the mortar by the architect, Dr. Samuel Brown, the president, was presented with a silver trowel, with which he com-

pleted the process of sealing the stone in its position. Dr. Brown made a brief address and introduced Dr. George D. Stewart, the orator of the occasion. Dr. Stewart declared, however, that on account of the bad weather, he would keep his address in his pocket. He extended hearty thanks to all who had helped in making possible the new building for the Academy, especially Dr. Pritchard and the Rockefeller Foundation for their bequests.

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The Joint Committee on Methods of Preventing Delinquency, New York City, has recently issued an inferesting publication covering the work of the various divisions of the Commonwealth Fund Program for the Prevention of Delinquency, beginning with the adoption of the program in November, 1921.

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Prof. Edmund B. Wilson addressed the members of the Biology Section of the New York Academy of Sciences at the regular meeting on November 9th. His subject was Modern Problems of the Cell.

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For the benefit of the Neurological Institute of New York, an international hockey match between the Canadians of Montreal and the New York Hockey Club has been arranged for the evening of December 15th at the new Madison Square Garden. The event will open the New Garden, and many prominent Canadians are expected to be present. The hockey match will be preceded by an exhibition of figure skating by well known professional skaters.

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At the meeting on November 9th at the Academy of Medicine of the Society of Medical Jurisprudence, Dr. Spencer L. Dawes and Dr. Sanger Brown discussed the medical and legal related to defective and insane emigrants.

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The Association to Promote Proper Housing for Girls helds its annual conference November 16th-17th at the Hotel Pennsylvania, New York. The general subject designated for discussion was Lack of Home Environment in Relation to Crime and Other Social Problems. On Monday, the sixteenth, a luncheon was tendered to guests and members at which Hon. Edward F. Boyle of the Children's Court was one of the speakers. Others who made addresses at the luncheon were Dr. Amos T. Baker, superintendent of the Bedford Reformatory, and Virginia M. Murray, general secretary of the Travellers' Aid Society. A conference of landladies was held on Monday evening, a conference of room registries on Tuesday afternoon, and in the evening an oratorical contest for girl speakers, representing various organizations and institutions, on the subject of Where To Live.

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The Jewish Mental Health Society's conference was held on November 12th. Dr. William A. White, of Washington, D. C., addressed those present on the subject of Crime and Insanity.

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Dr. C. R. Orton delivered an interesting lecture on Seeds as Carriers of Disease at the Museum Building of the New York Botanical Garden, Bronx Park, on November 16th.

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A course of fifteen lectures will be given at the New York Academy of Medicine on Tuesday afternoons at four o'clock, November 10th to March 2nd, inclusive, under the auspices of the National Committee for Mental Hygiene. On November 10th, Dr. Edward Grant Conklin, professor of biology at Princeton, spoke on Development in the Light of Heredity and Eugenics; on November 17th, Patty Hill, professor of education at Teachers' College, Columbia University, discussed Mental Hygiene and the Nursery School; on November 24th, Dr. Douglas A. Thom, of the Massachusetts Department of Mental Diseases, gave a paper on Mental Health and Habit Training; on December 1st, Dr. Thom spoke again on Habit Clinics for Problem Children. The list of succeeding lectures and lecturers follows in chronological order. Some of the Emancipation Problems of the Adolescent, by Dr. Thomas W. Salmon; The Mental Health of the School Age Child, by Dr. Ira S. Wile; Juvenile Delinquency and Mental Hygiene, by Augusta F. Bronner, Ph.D.; Mental Hygiene as a Preparation for College Life, by Dr. Arthur H. Ruggles; Mental Tests, by Paul Klapper, Ph.D.; Applying Mental Hygiene to the Community, by Stanley P. Davies, Ph.D.; Inheritance of Mental Disease, by Dr. Abraham Myerson; Individualism and Mental Health, by Dr. Adolf Meyer; New Concepts of Mental Health, by Dr. C. Macfie Campbell; Relation of Nervous Disorders to Functional Disease, by Dr. Foster Kennedy; Psychological Methods of Cure, by Dr. William A. White.

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The Personnel Research Federation, organized in 1921 to further research activities pertaining to personnel in industry, commerce, education, and government, wherever such researches are conducted in the spirit and with the methods of science, has recently held an exhibit of selected publications issued by its corporate members. Among these are the Engineering Foundation, American Federation of Labor, Bureau of Vocational Information, Vocational Service for Juniors, American Telephone and Telegraph Company, Western Electric Company, National Research Council, National Committee for Mental Hygiene, Carnegie Institute of Technology, the U. S. Public Health Service, the Civil Service Commission, Bureau of Mines, Bureau of Labor Statistics, and a number of leading universities of the country.

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The fourteenth convention of the Societâ Italiana per il Progresso delle Scienze was held under the chairmanship of Professor Solari, Rector of the University of Pavia, during the recent celebration of the eleventh centenary of that venerable institution. The university was founded by the Emperor Lothaire in 825 A. D.

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A dinner was held on November 23rd at the Waldorf-Astoria to inaugurate the national campaign for the endowment fund for the projected National Home for Aged and Needy Physicians.

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The Veterinary Medical Association of New York City met on November 4th at the New York Academy of Medicine. Dr. Maurice C. Hall, chief of the Zoological Division of the U. S. Department of Agriculture, spoke on Anthelmitic Medication. A number of interesting case reports were given.

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At the recent convention of the National Council of Women held in Detroit, Dr. Valeria Hopkins Parker, of New York City, was elected president. Dr. Parker is a graduate of Hering Medical School, Chicago, and among other important offices has held those of executive secretary of the U. S. Interdepartmental Social Hygiene Board, Chairman of the Social Hygiene Committee of the League of Woman Voters, and staff member of the American Social Hygiene Committee. She was also the first State policewoman in the United States, having held office in Connecticut.

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The Union Health Centre of the International Ladies' Garment Workers' local unions in New York City celebrated its fifth anniversary on November 6th with the opening of a new dental clinic. Dr. Frank Monaghan, City Health Commissioner; Porter Lee, of the New York School of Social Work, and Mrs. Sara Conboy, secretary of the United Textile Workers' Union, were present. A special department for children, equipped with all the latest means for doing preventive and corrective work, is one of the features of the new clinic.

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The first international conference for the Young Men's Christian Association held since the war will take place in August of 1926 at Helsingfors, Finland. Among subjects to be brought before the conference are sex life and social hygiene, applied psychology and problems of the home, of work, and of marriage.

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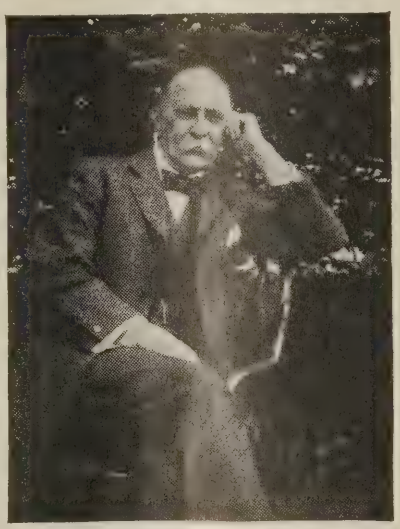
One of the features of the recent International Statistical Congress held at Rome, Italy, was the address of the great Italian criminologist., Dr. Enrico Ferri. Dr. Ferri's thesis was a comparison of the figures of murders and suicides, a comparison of these two forms of abnormal human conduct, and a statement of the direct relation which he believes exists between them. As a preventive of murder, Dr. Ferri advocated strongly the abolishment of capital punishment, stating that, ever since its abolishment in Italy thirty-five years ago, murders have distinctly decreased.

Book Reviews

OSLER

The Life of Sir William Osler. By Harvey Cushing, M.D. Two Volumes, with illustrations. Oxford Medical Publications. London and New York: Oxford University Press, 1925. Pp. 1413.

Osler believed in the fullest recognition of merit, whether of intention or achievement. All his life he delved into the histories of bygone makers of medicine, and it is more than fitting that this biography of the man Osler should at the same time serve as a monument to his predecessors. Medical history is bound up in this book of Osler's life, while a detailed picture of the medical profession detaches itself from the utterances of this all comprehending historian. One marvels at the concentration of the man, the limitless activity of his mind, the skill with which he turned everything to account. A lesson in economy and adaptation that he must have gained very early in his studies of the microscopic animal world.



SIR WILLIAM OSLER

Cushing's biography is invaluable not alone for the record of Sir Williams's remarkable life. It shows medicine all over the globe, medicine in its making seen through Osler's penetrating eye; it covers the period of epochmaking experiment and advance. It shows moreover how a man can have infinitely much to do and still do it well and crowd more in besides. No thought of self and an eight hour day here. He often drove himself past the limits of endurance, yet the will never failed him. He always accomplished what he wanted probably because he made a point of knowing just what he wanted, driving straight for the goal. He did not hesitate to change his goal if he doubted it. He was truthful with himself, and his chief inspiration was the welfare of the medical profession.

Thus much of his qualities as a man. A scientist with a genius for organization is a rare bird. But Osler adapted his inclination to his training, his opportunities to his inclination with the remarkable result of being able to see medicine as a whole, and his own share in it an infinitesimal part that nevertheless required constant rounding out and adjustment to all the other component parts.

The study of Osler as a man which is afforded by this complete biography makes us more keenly appreciate the quality of work he did in the clinic and in his writings. We better understand the manner of his attack on any particular subject and our contact with his works becomes more personal. The greatest value of the biography aside from the work itself is in its enhancement of his own works to the student. A reading of this work should serve as an inspiration to the physician and as a stimulus to him as he plods along through the many thankless tasks of everyday medicine. When he is confronted by the conflict of gain or progress he can think of Osler and so make his task less complicated.

This biography would seem to us as essential an item in every medical library as Osler's own *Practice of Medicine.*

THE ART OF MEDICAL TREATMENT

The Art of Medical Treatment. By Francis W. Palfrey, M.D. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 463.

The author has made a laudable attempt to place almost all that is known in medicine in one small volume, which is of course impossible. He has, however, produced a book that is full of useful suggestions and that outlines orthodox treatment of disease. His "First Thoughts," and his "Placing" captions are novel and suggest thoughtful judgment on the part of the attending physician.

The etiology of the various diseases is not sufficiently discussed, and hence the chief line of curative or combative treatment is not enough emphasized.

A few concrete thoughts that occur to the reviewer may not be amiss. Under the treatment of typhoid fever he says that abdominal distention must be avoided. He is correct. Tympanites is not a symptom of typhoid fever, it is a complication, and when it occurs, almost invariably shows a mistake in the treatment or feeding of the patient.

Chorea should never be classed with the nervous diseases. It should be classed as an infection, similar to acute arthritis. The author is correct in stating that arsenic is of doubtful value in this disease. On page 119, discussing the treatment of colds, he says that "most doctors smoke throughout colds without obvious harm." It might also be noted that most doctors do a lot of fool things and survive.

The author's next edition might well omit anorexia nervosa and valvular cardia as unworthy of separate description.

In his discussion of pernicious anemia and leucemia the author starts in with radical treatment without at all discussing focal infection as being the most frequent cause, especially mouth infection. In fact, any discussion of diseases of the blood is worthless unless the importance of mouth infection or the absence of mouth infection is noted. The treatment of pernicious anemia with arsenic and transfusion is not enough.

Purpura should rather be regarded as due to infection than "as a curiosity in the course of primary disease."

He does not sufficiently discuss neurocirculatory asthenia. It is a large subject, and many will not agree with him in stating that "as seen in soldiers it seems to be a manifestation of subconscious fear."

The reviewer suggests that in the next edition either hyperthyroidism be not discussed at all or that much greater detail be given to the many forms of this very important condition.

Even in a book of this size the treatment of the epileptic should not be outlined until many suggestions have been made as to possible causes, perhaps infection or disturbance of the endocrine glands. In other words, the management of an epileptic is a very large subject.

RESPIRATORY METABOLISM

Die gasanalytische Methodik des dynamischen Stoffwechsels. Von Priv.-Doz. Dr. Wilhelm Klein und Maria Steuber. Mit 20 Abbildungen. Leipzig: Georg Thieme, 1925. Pp. 99.

In this brochure the authors report upon the methods used by them through years of experience with the technic of studying the respiratory metabolism. As the results of the study of respiratory metabolism are not sufficient in themselves for the determination of the true metabolic procedures in the body, it is necessary to determine also the elementary constituents of the food, the feces, and the urine.

The significance of psychic influences, the physical properties of gases, the solubility of gases in fluids, the collection and preservation of gases, the cleansing of the mercury, and the apparatus used are discussed. The latter are of two types: 1, those used for purely physiological purposes, such as the Pettenkofer-Tigerstedt, the Regnault-Reiset, and the Zuntz-Geppert; 2, those that are suitable mainly for clinical purposes, as the Benedikt and the Krogh apparatus. The technic in the use of each one of these apparatus is described in great detail.

There is little of practical value to the general practitioner in this brochure but one who has opportunities of using these methods will find much valuable material in it.

THORACIC EMPYEMA

Some Fundamental Considerations in the Treatment of Empyema Thoracis. By Evarts A. Graham, A.B., M.D. St. Louis: C. V. Mosby Co., 1925. Pp. 110.

This volume of only a little more than a hundred pages contains a brief but thorough discussion of the pathology and the surgical methods which should be resorted to to prevent an empyema from becoming chronic. In the chapter on pathology, the author maintains that the prevalent conceptions of mechanics of open pneumothorax are erroneous, and by experimental work shows the equality of relative densities of both lungs in unilateral open pneumothorax. This chapter requires careful reading to understand the theories of the author which are disputed in certain circles. In the later part of this chapter he discusses the advantage of repeated aspiration compared with early continuous drainage and comes to the conclusion that if early continuous drainage is to be carried out it would seem that the simplest possible procedure should be employed, as, for example, some one of the methods which are based on the principle of the insertion of a drainage tube through a cannula between the ribs with the later withdrawal of the cannula.

As to when and what kind of operation should later on be performed, he maintains that a convenient criterion is the presence of frank puss. The Empyema Commission of the United States Army during the war, of which Dr. Graham was a member, found that usually a period of from two to three weeks elapsed from the time of the onset of a streptococcal pneumonia to the appearance of definite frank puss, during which time usually about four aspirations had been made. An excellent bibliography on the subject completes this well written treatise which the author himself admits does not cover the subject of empyema in an exhaustive manner, but any surgeon who studies carefully the theoretical basis for the treatment of empyema as outlined by the author, will admit its soundness. The work received and amply deserved the Samuel D. Gross Prize for Surgery for the year 1920.

FATS

The Fats. By J. B. Leathes, M.A., M.D., F.R.S., and H. S. Raper, C.B.E., M.D., Ch.B., D.Sc. Second Edition. London and New York: Longmans, Green and Company, 1925. Pp. 242.

The second edition of this useful monograph on the fats has been thoroughly revised, and the text and bibliography brought up to date. Inasmuch as another monograph in the same series covers the phospholipines, these substances, so important in the metabolism of the body, have not been included. The last chapter on the parts played by the fats in the life of the cell is a useful survey of our knowledge at the present time.

THE DIGESTIVE PROCESS

Experimentelle Physiologie und Pathologie der Verdauung (Chymologie). In dreissig Vorlesungen von Prof. Dr. E. S. London, Leningrad. Mit 16 Abbildungen im Text. Berlin-Wien: Urban & Schwarzenberg, 1925. Pp. viii-197.

This monograph consists of a series of lectures given by the author. It is based on a personal experience of many years in laboratory investigations. The main endeavor of this publication is to show what problems in digestion have already been solved with the aid of experimental operative methods and what problems still await solution.

The process of the digestive mechanism, as they occur in the various parts of the digestive tract, are given in great detail. The changes resulting from the surgical removal of various parts of the digestive tract are described. The student of the digestive process will find much valuable material within these pages.

ACUTE ABDOMINAL DISEASE

Clincal Researches in Acute Abdominal Disease. By Zachary Cope, M.D., F.R.C.S. Oxford Medical Publication. Illustrated. London and New York: Oxford University Press, 1925. Pp. 148.

This book of less than 150 pages offers a fascinating treatise to those interested in abdominal diseases. The introductory chapter on the Scope of Clinical Research is followed by sections on the Parietal Peritoneum and the Localization of Pain, on Muscular Rigidity on Cutaneous Hyperesthesia and on Phrenic Shoulder Pain. There are also interesting chapters on the differential diagnosis between acute thoracic and abdominal lesions, on genitourinary symptoms in appendicitis, on the femoral test for hypogastric peritonitis, and on perinephric abscess occurring without disease of the kidney.

The work is well illustrated by numerous diagrams and sketches.

EYE DEFECTS FROM SKULL INJURIES

Ocular Defects Arising from Skull Injuries. Bureau of Workmen's Compensation Bulletin, No. 10. By John S. Somberg, M.D. State of New York, Department of Labor, 1924. Pp. 49.

This is a résumé of the study of ocular defects from skull injuries as met with in the Medical Department of the State Department of Labor. It is based largely on the author's personal experience for the last one year and a half, and to this are added records of previous years. The subject matter is of great importance, especially to those engaged in industrial accident work, and the practical value of the author's findings would be considerably enhanced by the inclusion of illustrative cases to elucidate the text much more fully. A dry, textbook enumeration of pathological conditions is not apt to leave much of an impression on the reader's mind.

PARASITOLOGY

Parasitology for Medical Students. By Alex. Mills Kennedy, M.D. (Glas.), Professor of Medicine, University of Wales. Oxford Medical Publications. London and New York: Humphrey Milford, Oxford University Press, 1925. Pp. 7-142.

This book is based on the author's clinical teaching, and is designed for medical students and practitioners rather than for those desiring to specialize in parasitology. The colored plate and the microphotographs are original with one exception. The subject material is divided into chapters on insects and arachnids, tapeworms, flukes, roundworms, protozoa, and spirochetes and fungi.

The parasites and their life habits are described, including also the methods of destroying them. The symptomatology, diagnosis, prophylaxis, and treatment of the disease caused by the different parasites are given concisely.

OPHTHALMOLOGICAL LITERATURE

The Ophthalmic Year Book. Volume XXI. Edited by William H. Crisp. Assisted by Thirty-Three Collaborators. Ten Illustrations in the Text. Chicago: The Ophthalmic Publishing Company, 1925. Pp. I-X, 1-323.

This annual index of ophthalmological literature has become an indispensable aid to every eye man who aims to keep abreast of the literature of the world. The most important contributions of permanent value are duly catalogued and digested, and so systematically arranged as to authors and subjects that the reader is easily enabled to lay his hand on any subject desired. More and better executed illustrations would greatly enhance the value of the text.

DISEASES OF THE EYE

Ocular Therapeutics. By Dr. Ernst Francke. Translated by Clarence Loeb, A.M., M.D. St. Louis: C. V. Mosby Co., 1925. Pp. 1-183.

This little volume is devoted to the teratment of ocular affections (exclusive of optic and operative therapy) in a manner as full as it is concise and practical. The book is divided into two large parts, the first occupying itself with general subjects, such as tuberculosis, syphilis, serotherapy and organotherapy, ray and light therapy, and electric treatment, while in the second part the treatment of diseases of the eye is taken up seriatim. The work is eminently practical, fully abreast of the times, and can be recommended as an excellent therapeutic vademecum in the oculist's daily work. The translation is well done.

THE FOUNDATIONS OF MEDICAL SCIENCE

Das Wesen der Heilkunde. Historisch-Genetische Einfuhrung in die Medizin. Fur Studierende und Arzte. Von Dr. Georg Honigmann. Leipzig: Felix Meiner, 1924. Pp. 319.

A critical survey of the requirements of medicine, including the necessary background for the physician. Here we have a recapitulation of what the author feels should be the foundations of every medical man. He includes the required studies and how they should be incorporated into the mind or makeup of the doctor and an attempt at a better understanding of the environmental conditions—structural, economic and personal.

The author writes in a clear editorial like fashion and is frequently more easily followed than agreed with. Nontheless he has many original points of view and anyone familiar with German would do well to look over this small monograph.

BACTERIOLOGY

A Textbook of General Bacteriology. Eighth Edition, Thoroughly Revised. Fully Illustrated. By Edwin O. Jordan, Ph.D. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 752.

The eighth edition of Jordan's *Bacteriology* is not much changed from previous editions. The book still retains the form in which it was originally printed, the author having resisted the temptation to increase the size of the volume by the addition of technical procedures. Instead, the student is referred to standard works for all matters concerning the preparation of media and the details of cultivation of organisms. The public health aspects are well dealt with. The whole forms an excellent general text for the student.

CHEMISTRY IN MEDICINE

Physical Chemistry in Biology and Medicine. By J. F. McClendon, Ph.D., and Grace Medes, Ph.D. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 425.

It is high time that the scattered material on physicochemical investigation of the last few years, as it applies to general biology and medicine, should have been collected in convenient form. The senior author, a well known worker in the field, is admirably equipped for the purpose. The essentials of the subject have been very simply explained, and any deficiency in its handling has been made up by the complete bibliographies at the end of each chapter. The physician who talks glibly about the pH of the blood without knowing in the least what "pH" means, or how it is obtained, can find a simple explanation in chapter 5. It is doubtful if he will read much of the rest of the book.

LORD BYRON

Glorious Apollo. By E. Barrington. New York: Dodd, Mead and Company, 1925. Pp. 371.

The explanation of behavior has become one of the most fascinating of literary pursuits. And while many writers sense the underlying motives, the real treat comes to the scientific reader with interpretive training confronted by such rich fare as Barrington's *Glorious Apollo.* The Byron mystery has been acutely relived, a theory formed, and every attainable fact marshalled to support the theory. Byron remains inexplicable. But the victim of years of misrepresentation and misunderstanding comes close to

writer and reader in a new and sympathetic light.

The chief cause for the mystery surrounding the Byron case was the feeling that the actors in that moving drama behaved contrary to all known rules of psychology. Recent discoveries in the psychoanalytic field, to which the writer must have had access in preparing her detailed "case history" mark this "incomprehensible" behavior as inevitable in the characters so lucidly described.

Here was a man with the emotional instability of a child, a neurotic inheritance, a mind unhampered by repressions, limitless in its resources but radiating its entire energy about the child ego. Here was a woman, healthy and normal, safe for the fashionable masochistic bent. Her perfectly normal leaning towards misery was roused to fanatic heights by her husband's component sadism. If either had had less of his or her preponderating trait an adjustment might have been reached. If Lady Anne could have taken the whip hand, and Byron sated for a time his unconscious craving for effeminate selfpity, the tragedy might have ended otherwise.

After the Byron separation each proceeds in a characteristic way, characteristic, that is, to those who can read below the surface, quite mad to those whose complexes bind them too closely to the strugglers to see clearly for themselves. Lady Anne immolates herself, Byron continues in the process of disintegration, a process inevitable with his self-centred, preadolescent emotional make up. His literary gift undoubtedly delayed the final collapse. The outlet through his writings might have proved his salvation, but it was and always had been turned to destructive ends.

Such situations are dealt with harshly today by the new psychology. Byron and Augusta Leigh would have been left to shift for themselves much more readily than a hundred years ago. Lady Anne would be justified and commended for putting aside drags upon herself and her potentially useful existence. We know today that we have the right to force people to work out their own salvation or perish in their folly. We only harm them by continuing our masochistic agitations about them.

Medicoliterary Notes.

Vienna has a new journal entitled *Biologia Generalis.* The editors are Leopold Löhner, Dr. Raymond Pearl and Valdislav Ruzicka.

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A book of the month published by Macmillan is Karel Capek's *Krakatit,* a novel telling the strange story of a man who made a discovery so full of horrible potentialities that he endured persecution and many dangers in order to preserve his ruinous secret. The Neighborhood Playhouse has announced that Krakatit in dramatic form will be one of its early productions. The author, Capek, is well known through his plays already produced in New York, *The World We Live In, R. U. R.,* and *The Makropoulos Affair.*

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An invention of unusual interest to the medical profession was demonstrated recently by the Columbia Phonograph Company, New York City. This was a device for the accurate recording of heart sounds, particularly the murmurs on which diagnosis is based. This should be of special value in medical schools, in that the various types of sounds may be reproduced in the classroom, and also to physicians practising at a distance from large clinics, who will be able to have sets of records illustrating all the kinds of sounds, for use in diagnosis. The invention is the product of the work of the Bell Telephone Laboratories, the Columbia Phonograph Company, Dr. Richard C. Cabot, of the Harvard School of Medicine, Dr. Horatio Burt Williams, of the New York College of Physicians and Surgeons, and Dr. J. C. Gamble of the School of Medicine of the University of Pennsylvania.

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Police headquarters in New York have a bronze roll of honor of policemen who have lost their lives while on duty. This tablet is a document of unusual interest. It shows that eighty-three policemen have been killed in the performance of their duties since records began to be kept in 1854. It shows that more policemen have been killed here in the last five years than were killed in the fifty years between 1854 and 1904. Forty-three policemen were slain in the last decade, as against forty in the sixty-one years preceding. The era of reckless shooting of policemen by bandits began in 1921, in which year six policemen were killed. The highest number were slain in 1922—ten in all. Four were killed in 1923 and 1924, and in 1925 so far three have lost their lives. This list does not include the names of those policemen who were wounded and then partly recovered, but died a few months later from the effects of the wound. —*N. Y. Times.*

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The *State Hospital Quarterly,* published by the New York State Hospital Commission, contains an interesting article on the psychiatric examination of a child, prepared by the Division on Prevention of Delinquency of the National Committee for Mental Hygiene. The article contains suggestions for such an examination, with particular emphasis upon the psychiatrist's attitude, and an outline for such a study.

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New York playgrounds and community centres outnumber those of all other states. The total is 858. Massachusetts has 706 playgrounds and Pennsylvania 687.

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A report has recently been made public by a committee of professional men appointed by the Ministerial Association of Vancouver to investigate the results of socalled faith healing. They found that of 278 supposedly cured persons who were examined, only five seemed to have made any improvement. No improvement could be found in the condition of 212, although they had declared themselves "cured," and twenty-two were distinctly worse than they had been before going to a "healer." Thirty-nine had died.

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The dreaded foot and mouth disease has appeared among the cattle of several English counties, including Cheshire, Lancashire, Yorkshire, Derbyshire and Staffordshire, and these counties have been quarantined by the Ministry of Agriculture.

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The National Plant, Flower and Fruit Guild, with headquarters in New York, is carrying on a campaign to encourage the use of living trees planted in pots for Christmas trees, with a view to lessening the annual destruction of potential evergreen forests in the United States. It has been announced that more than twenty chambers of commerce, rotary clubs and other organizations are coöperating to put the plan in operation in their various cities, and that two State governors, those of Nebraska and Arkansas, have endorsed the plan, as well as the American Forestry Association and the American Tree Association.

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Two residents of Utah have succeeded in making grow and bear fruit grains of corn and wheat found deeply covered in the original habitations of cliff dwellers. Scientists have placed the age of such grain at from 900 to 1,200 years. The tallest stalk grown from the corn measured more than seven feet and the smallest four. Each stalk produced more than one ear of corn, while the native corn grown fifty feet away produced only one ear to a stalk. Some of the plants had as many as five ears, and bore leaves nearly five inches wide. Another farmer purchased a seed of wheat found in an ancient cliff dwelling, planted it in 1923, and in 1924 harvested several bushels from the original kernel.

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A resolution has recently been presented to the Reichstag to make compulsory the sterilization of unmarried mothers.

Dr. Boeters, author of the resolution, includes in his so-called defective class all deaf, dumb or blind children of a mentality below the average; morally irresponsible adults; and those afflicted with hereditary deafness or blindness. The last class would be permitted to marry only after they had been awarded a certificate of operation. The resolution reads in part: Women and girls who have borne more than one child, whose father cannot be determined, are to be examined, and, if it is found that their mentality is below normal, they are to be made sterile or kept in public institutions until they are past the child bearing age.

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We Must March, Mrs. Honoré Willsie Morrow's latest novel, is based on the diary of Narcissa Whitman, wife of Dr. Marcus Whitman, who went with his bride to the Columbia River region in 1836. In the same party was Eliza Spalding, bride of Dr. Whitman's associate. They were the first white women to cross the Rockies.

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The Carnegie Institute of Washington has established a monkey colony in its embryological laboratory where for the first time in the history of science monkeys will be observed and studied in succeeding generations of their families under conditions as similar as possible to those of their native jungle. One of the chief objects of the colony will be the investigation of the theory of man's descent from the higher apes. The colony will consist of macaque monkeys, for, although these are not so similar to man as the anthropoid apes, they are more readily available, the climate of their habitat—Asia—is somewhat like that of this country, the cost of obtaining and keeping them is comparatively small, and they are small and have tractable and amiable dispositions tending to facilitate study of themselves and their manners and customs.

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The latest report of the California State Bureau of Labor Statistics states that 5,000 children were engaged in agricultural pursuits in that State at the time of submission of the report. The census report of 1920 showed only 1,832 children so engaged. The bureau found many children working in the cotton fields of Fresno County and the Imperial Valley. It recommends amendments to the California child labor and school attendance laws in an effort to better these conditions.

* * *

Among recent publications of interest to the medical profession are: *International Yearbook of Child Care and Protection,* compiled by Edward Fuller (Longmans); *The Little Child in Our Great Cities,* by W. Bertram Ireland, (American Child Health Association); *Mental Health Hints for Parents,* published by the Mental Hygiene Division of the Public Charities Association of Pennsylvania, Philadelphia; *A Practical Psychology of Babyhood,* by Jessie C. Fenton (Houghton); *Rejuvenation by Grafting,* by Dr. Serge Voronoff (Adelphi Co.); *The Climate of the United States,* by Robert De Courcy Ward (Ginn); *The Evolution of Anatomy,* by Dr. Charles Singer (Knopf); *Why We Behave Like Human Beings,* by George A. Dorsey (Harper); *Chemistry and Civilization,* by Allerton S. Cushman (Dutton); *Simplifying Motherhood,* by Dr. Frank Howard Richardson (Putnam); *Personal and Community Health,* by Clair Elsmere Turner (Mosby); *Essays in Psychopathology,* by Dr. William A. White (*Nervous and Mental Disease Monograph Series No.* 43); *Social Problems and Education,* by Ernest R. Groves (Longmans); *Constipation,* by Dr. William S. Sadler (McClurg); *The Biology of Population Growth,* by Dr. Raymond Pearl (Knopf); *Evolution and Genetics,* by Thomas Hunt Morgan (Princeton University Press); *The Revolt of Modern Youth,* by Judge Ben Lindsey and Wainwright Evans (Boni); *Systems of Public Welfare,* by Howard W. Odum and D. W. Willard (University of North Carolina Press); *Inheritance of Mental Diseases,* by Dr. Abraham Myerson (Williams & Wilkins); *Report of a Mental Hygiene Survey of New York County Jails and Penitentiaries, with Recommendations,* by the National Committee for Mental Hygiene; *The Challenge of Childhood,* by Dr. Ira S. Wile (Knopf).

* * *

New York State has added to its laws during 1925 a number of important provisions relating to the discovery, education, care and treatment of physically handicapped children. Boards of education and trustees of schools are authorized to provide transportation, home teaching, special classes or schools, scholarships in nonresidence schools, tuition and maintenence in elementary, secondary, higher, special and technical schools, and, upon recommendation of the State Health Department, surgical, medical or therapeutic treatment, hospital care, braces and other appliances for them. The State Department of Health is required within the limits of the appropriation made for the purpose to cause physical examinations to be made of physically handicapped children "prospectively or actually incapacitated for the normal pursuit of an education."

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Wild animals in South Africa are decreasing so rapidly, due to their hunting with motor cars, long range magazine rifles, and search lights, that the government has been aroused to take steps toward stopping the wholesale slaughter. The former Minister of Lands has been making an eloquent appeal in Capetown for the preservation of the mere remnant of a herd of elephants, the only ones left in the Union, which the farmers are destroying by cutting off their water supply. The white rhinoceros is practically extinct already, as are many species of antelopes, the mountain zebra, the black rhinoceros, the eland, and many other animals of the socalled big game class. The Sabi Game Reserve, established by President Kruger, is quite small, and those interested in the movement are trying to bring about its extension to a much larger scale that will help at least to protect and preserve some of the most interesting and beautiful animal life of the world.

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The National Health Council has summoned to an American Health Congress, to be held in Atlantic City the week of May 17, 1926, leading authorities on the various phases of preventive health work, and workers concerned with the administrative problems of public health service. The Steel Pier will be headquarters for the convention.

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A prohibition movement is rapidly spreading and gaining strength in Hungary. It is being sponsored by the Good Templars and the Blue Cross Association. The aim of the former organization is to establish a completely dry Hungary, while the latter are fighting only against alcoholic excesses. Questionnaires have been sent out throughout the country asking the expression of an opinion from responsible individuals and organizations on: 1, That all public houses and inns be closed from Saturday at 2 P. M. until Monday at 8 A. M.; 2, That all inns selling brandy alone be abolished; 3, That youths under eighteen shall not be served with alcoholic drinks in licensed establishments.

* * *

The Children's Bureau of the U. S. Department of Labor has recently issued a report on laws relating to sex offenses against children as Publication No. 145. It includes abstracts and texts of state age of consent laws and of laws relating to abduction, seduction, prostitution and other sex effenses in regard to minors. The text of the Federal laws that have some bearing on the subject, as for instance the laws relating to the white slave traffic, or to the transportation of aliens for immoral purposes, is also included. Another legal report of significance to child welfare workers is soon to be issued by the Children's Bureau—a report on adoption laws in the United States. A preliminary analysis of the development and character of adoption legislation in this country is followed by the text of sections from recent adoption laws of various States.

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While Mars was comparatively a near neighbor last summer, Dr. W. W. Coblentz, of the Bureau of Standards, was able to make some interesting observations of the surface of the planet and to draw some equally interesting conclusions. With the use of an extraordinarily delicate instrument, he reached the conclusion that the mean annual temperature on the surface of Mars is about 20° F., compared with the earth's 59°. The mercury can descend frequently to 100° below zero. A noonday temperature at the equator, where there is vegetation, might rise as high as 65°. Dr. Coblentz concluded that at night the surface temperature on Mars is about 70° C. below zero, or about 50° F.

Abstracts from Current Literature

GYNECOLOGY AND OBSTETRICS

Tubal Inflation in Sterility.—Lawrence M. Randall (*Medical Clinics of North America,* January, 1925) asserts that there is no doubt that tubal inflation (transuterine pneumoperitoneum) is an important and practical addition to our armamentarium for the diagnosis of the etiology of sterility in women. If reasonable care is exercised in the selection of cases, no untoward results may be expected from the inflation. In none of the patients subjected to this test in the Mayo Clinic have complications arisen as the result of its employment.

The author is not prepared to make, as yet, a definite statement concerning the therapeutic effect of tubal inflation. In a certain number of patients, occluded tubes have been opened by this method, in some of whom occlusion was the only factor which could be found to explain the failure to conceive. It would seem logical to expect pregnacy to occur in these patients.

In the author's cases, the history was one rather commonly met with in sterile women, that of a low grade and apparently insignificant infection, following either abortion or delivery. It is not possible to demonstrate gross lesions in such patients, but with the inflation the fallopian tubes are found to be closed. The author believes that these cases should be subjected to at least six tubal inflations before operation is advised. In a few instances the tubes have apparently been opened with gas under pressure.

The Ovarian Hormones.—R. Courrier (*Revue Française d'Endocrinologie,* March, 1925) believes the hormone which regulates the menstrual cycle is contained in the liquor folliculi. He names it *folliculine.* Injected into female animals castrated months earlier, it induces in a few hours the characteristic manifestations of the follicular phase of genital life immediately following the estrus. In the author's experiments the reaction was not confined to the vagina, where the injection was made, but was characteristically manifest also in the mammary glands, the salpinx, and the uterus. Chemical analysis shows folliculine to be soluble in alcohol, ether, acetone, and benzine. It does not seem to be a phosphatide, but rather to belong with the neutral fats and cerebrosides. An interesting fact is seen in its action before arrival at puberty. In animals only a few days old the vaginal epithelium proliferated intensely when injected with folliculine. But even beyond this, injection of a pregnant female near term affected the vagina of the fetus in the same way. In conclusion, the author affirms that the ovary secretes at least two hormones, the follicular hormone and a luetic hormone. The first he has now isolated; the second has not yet been identified, but is unquestionably of equal importance.

Eclampsia Statistics from the Clinic of the University of Helsingfors.—Laimi Leidenius (*Acta Societatis Medicorum Fennicæ Duodecim 1925, Tom VI, Fasc. 3*) gives a survey of eclampsia cases occurring during fourteen years, from January, 1911, to December, 1924, and as the Finnish women incline more and more to hospital care during parturition—there being only 184 confined at home in 1923 against 891 in 1911—the 204 cases treated at the University clinic and the ninety-three at private sanatoria practically comprise the eclampsia cases in the city of Helsingfors with a population of 200,000. Only those having actual convulsions are enumerated and the occurrence of eclampsia in the series of 40,413 births was 1 to 166 or 0.60 per cent. While the author finds from his observations that toxemia of pregnancy is on the decrease, the statistical curve of eclamptic morbidity shows two sharp upturns during the period studied, one being in direct relation to the havoc and food scarcity due to war, the other coincident with an epidemic of encephalitis lethargica, and this would seem of significance in searching for the etiological factors that predispose to eclampsia. Thus the same condition of the brain that predisposes to encephalitis might prepare the soil for eclampsia, and similarly the psychic disturbance due to war would lower the resistance of the nervous system to unfavorable influence, including the toxemia of pregnancy. In contrast to this, the obstetrical annals of some other countries show a diminution of eclampsia during war, the inference being that the scarcity of meat and the laborious outdoor life that the exigencies of war imposed upon some women were of benefit. That eclampsia is not infrequently associated with contracted pelvis is borne out in the 204 tabulated cases, which also showed a larger proportion of undersized women than was noted among other parturients, and that some inherent constitutional inferiority, manifesting itself in anomalies of the physical organism, has a bearing upon the incidence of eclampsia, is a conclusion arrived at by the author.

That eclampsia is preeminently a disease of primigravidæ was also noted in the clinical study, there being five times as many cases as in plurigravidæ. The clinical course shows the proportion of eclampsia cases to be seventeen per cent. in pregnancy, fifty-eight per cent. during labor and twenty-four percent. in the puerperium, the latter being mostly pluriparæ. Albuminuria was present in high degree in seventy-nine per cent. of the cases and absent in nine per cent. Marked edema occurred in thirty-eight per cent. The blood pressure was 130 to 205 excepting in twelve per cent. of the cases, where it did not exceed 120, but there was no relation between the blood pressure and the severity of the case. Among the factors that have brought about a decrease in eclampsia among Finnish women are prophylaxis and treatment in the preeclamptic stage, made possible since gravid women more and more acquire the habit of consulting physicians; also the more rational underwear of modern times is thought to be of moment, especially in the windy Helsingfors. Treatment consisted in isolating the patient in a dark room with icebag on head and narcotics more or less—mostly morphine and chloral—according to Straganoff's method. Venesection was practised in the majority of cases, from four hundred to six hundred c.c. once, rarely twice. In cases of moderate severity low or medium forceps were applied as indicated. In deeply toxic cases where the patient was comatose with many convulsions, high blood pressure and scant urine together with undilated cervix, the procedure was operative delivery without delay. In 154 cases with antipartum eclampsia twenty-seven gave birth spontaneously, thirtv-four were delivered by low and medium forceps, seventeen had high forceps, version or craniotomy, fifty-six had cervical dilation with operative extraction; abdominal Cæsarean section was done in nine cases and vaginal Cæsarean in six. For rapid delivery the author finds Cæsarean section most satisfactory, contrary to the experience of Heinlein and Hinselman. For cervical dilatation the Champétier bag was used in some cases. Subsequent to 1915 Von Wichman's dilator was largely used, being much safer than the Bassi dilator.

The maternal mortality in the series studied was 14.2 per cent. and the child mortality 34.3 per cent., being somewhat lower than contemporary statistics from some other hospitals, namely, the Rudolf Virchow Krankenhaus in Berlin and the Essener Frauenklinik, but Forssner of Stockholm by conservative treatment shows a maternal mortality of 10.8 per cent.

Irradiation of the Region of the Pituitary Gland in Ovarian Insufficiency.—Alfred Szenes and Josef Palugyay (*Wiener klinische Wochenschrift,* May 7, 1925) report for the most part good results in thirty-eight patients with climacteric disturbances. Two to three weeks after the last irradiation the hot flushes disappeared entirely in eight cases, were diminished in number in twenty-four cases, unaffected in three cases, and increased in three cases. A subsequent examination in twenty-five cases three months later showed a partial or complete recurrence as to the number of flushes in more than half of the cases. After the third irradiation the number of the flushes was diminished more than one half, and after the fifth irradiation more than two-thirds of that of the first irradiation.

Attacks of perspiration, which in twenty-four cases occurred in connection with the flushes previous to the treatment, disappeared or were ameliorated in sixteen cases usually only for two months. In four cases, in which perspiration did not occur before treatment, this phenomenon occurred after varying periods after irradiation. Headaches, which occurred in twenty-eight cases previous to the treatment, were more or less favorably influenced in half the cases. In two cases, previously without headaches, the latter

occurred after the irradiation, and in one case these were aggravated. The improvement in sleep in general ran parallel with the diminution of the number of flushes.

On the basis of these results the authors feel justified in recommending irradiation of the pituitary region in cases of ovarian insufficiency. They emphasize, however, the necessity of careful doses of the amount of the röntgen rays and a very careful control of the symptoms of insufficiency, as there are cases which are aggravated by the treatment. In cases that prove completely or partially refractory after the third irradiation of the pituitary region, it might be well to irradiate the thyroid glands, and then to follow this with additional irradiation of the pituitary region only after six to eight weeks but with smaller doses, or to try the application of diathermy to the region of the pituitary gland.

Experiences with Ovarian Grafts.—Perazzi (*Revue Française d'Endocrinologie,* March-April, 1925), inserted homoplastic grafts in four women, three of whom presented signs of ovarian hypofunction, and the fourth had undergone hysterectomy with ablation of the adnexa. Autoplastic grafting was also applied to fourteen women who had been subjected to complete hysterectomy and ablation. The results were satisfactory in the first instance and generally good in the second. In homoplastic grafting attention must be paid to blood affinity between the donor of the graft and its recipient.

Stimulating Effect of the X Ray on the Genital Glands.—At the twenty-third Italian Congress of Obstetrics and Gynecology, held at Naples, May 5 and 6, 1924, A. Pais reported (*Revue Française d'Endocrinologie,* March-April, 1925) his work in this line and emphasized the benefit obtained from irradiating the ovaries of amenorrheic girls and women. Menstruation reappears and the condition renders fecundation possible. The author also reports encouraging results in rejuvenation of the genital glands by means of the x ray. Radiotherapy in stimulating doses might, he thinks, be advantageously utilized for a variety of endocrine glands.

Diagnosis and Treatment of Hypoovarianism.—In a paper by K. G. Hancher and J. Rogers (*Endocrinology,* January-February, 1925) the authors express the view that very little indeed is actually known of the functions of the ovary, our best evidence respecting them being that incomplete amenorrhea is often benefitted and symptoms sometimes attendant on it ameliorated by ovarian extracts, while total amenorrhea is never so influenced. This symptomatic improvement is explained as due probably to reflex action of the invigorated ovary on the thyroid and pituitary glands. The local pain of dysmenorrhea seems dependent on defective ovarian nutrition, and hypofunctioning is therefore presumable. This can be supposed to cause defective activity on the part of the pituitary or the thyroid. The reasons for combining ovarian with thyroid or pituitary feeding, therefore, are quite obvious. They seem each to reinforce what little is known of the function of the other, and practically a much better result may be obtained by a combination than by the use of ovarian feeding alone.

Spinal Anesthesia in Gynecological Operations.—Richard Mandelbaum (*Zentralblatt für Gynäkologie,* May 9, 1925) reports that his clinical experience does not allow him to recognize spinal anesthesia as a complete substitute for inhalation anesthesia. In general he found that the spinal anesthesia is borne better by old women than by the young. The indications for the latter must be more sharply defined. Patients with a hysteroneurasthenic predisposition are not at all suitable cases for spinal anesthesia, as this technic requires an absolutely healthy nervous system. Advanced age above sixty years is a positive indication because of the danger of pneumonia; also cases of pronounced cardiac and vascular disease.

Asthma and Ovarian Disturbance.—After noting that asthma has been recognized at times as definitely associated with hypothyroidism or with hyperthyroidism, F. Claude and H. Saleur (*Revue Francaise d'Endocrinologie,* March, 1925) present the report of a case of severe asthmatic crises in a girl of sixteen, occurring in connection with each menstrual epoch improved temporarily by ovarian extract, but receiving lasting benefit only on removal of a mildly inflamed appendix. At operation the ovaries were found enlarged and abnormal in appearance. No explanation of the connection between ovarian and pulmonary dysfunction is undertaken in the account.

Ruptured Tubal Pregnancy and Its Treatment with Own Blood Infusions.—Erich Hempel (*Zentralblatt für Gynäkologie,* February 21, 1925) bases his operative technic in ruptured tubal pregnancy upon the use of the infusions of the patient's own blood. With this procedure hasty operation is set aside; the reinfusion of the blood is the important feature and the site of the rupture is sutured subsequently. The reasons advanced are that the exsanguinated body needs the lost blood as soon as possible and that the ruptured tube is never seen to bleed.

The operation is begun with a saline infusion, and the abdominal incision is then made. A small deep longitudinal incision is made in order to catch the main mass of blood in a lowered position of the pelvis. The edges of the peritoneum are elevated so as to prevent the escape of the blood. About 200 c. c. of blood are then taken out with a ladle, allowed to run through a layer of gauze and immediately mixed with sodium citrate and then mixed with the salt infusion. This solution must not be allowed to cool. The abdominal wound is then enlarged and the rest of the blood lying in the lower pelvis is ladled out. This procedure is aided by alternating elevation and lowering of the pelvis and by compressing the flanks. The ruptured tube is then clamped and excised at the angle of the uterus. If the woman does not desire any more children she may be sterilized by excision of the other tube. Appendectomy may be done at the same time if it can be done without too much trouble.

On Climacteric Hypertension.—The fact that many instances of socalled essential high blood pressure, occurring at the menopause, are prolonged and merge into socalled senile hypertension, while others diminish and disappear with the subsidence of other menopausal symptoms, is explained by G. Marañon (*Revue Française d'Endocrinologie,* December, 1924,) on the supposition that the same pathogenic factors which cause the menopausal symptomatology also disturb and raise vascular tonus. He believes that climacteric hypertension should be attributed in the latter group of patients to a condition of vascular hypertension dependent probably on the glandular factors which signalize this crisis, and especially on the hyperadrenalinemia which unquestionably exists in these cases. The fact that in some persons hypertension attracts no attention, while in others it is accompanied by headaches, vertigo, a subjective sensation of palpitation particularly annoying at night, noises in the ears, and other symptoms, is probably due to special condition of adaptation on the part of the individual neurocirculatory apparatus. The same holds in the hypertension of arteriosclerosis. Vincent, Livon, Villemin, Schickele, Culbertson, and others have all shown that ovarian extract has a positive hypotensive action. However, the good effects obtained in many of the author's cases he attributes not alone to this, but rather to treatment by means of a régime of dietetic, hydrotherapeutic, and hygienic measures.

Studies of the Metabolism of Women. I. Variations in the Fasting Blood Sugar Level and in Sugar Tolerance in Relation to the Menstrual Cycle.—Ruth Okey and Elda I. Robb (*Journal of Biological Chemistry,* August, 1925) performed more than three hundred determinations of blood sugar, taken before breakfast, on twenty-six normal women, covering forty-nine menstrual periods, and from these analyses they feel that there is no ground for concluding that there is a consistent cyclical variation in the fasting blood sugar level in women. The average values during menstruation were slightly higher than for the inter-menstrual period. However, there were a greater number, not only of high values, but also of low values, during the menstrual period than at any other time. Hence, it is believed that in making single determinations of blood sugar for purposes of clinical diagnosis the time of the menstrual period should be avoided if possible. The ingestion of 1.75 gm. of glucose to the kilo of body weight led in the ten cases observed not only to smaller initial increases in blood sugar, but also to a greater degree of secondary hypoglycemia during the menstrual period than at any other time of the month. The effect noted immediately before and immediately after this time is just the opposite, i.e., a lessened tolerance, while the ingestion of glucose in the intermenstrual period has an intermediate effect. This smaller increase and greater decrease in blood sugar following glucose ingestion during menstruation suggests an altered functioning of the pancreas, coincident with the time of menstruation.

An Adenomyoma of the Vesicovaginal Septum and a Supernumerary Ovary.—Leo Brady (*Bulletin of the Johns Hopkins Hospital,* April, 1925) describes a case in which an adenomyoma of the vesicouterine space was found, this being the first case in the literature in which an adenomyoma in this situation has produced symptoms. In addition to this, there was a supernumerary ovary situated on the anterior surface of the broad ligament.

Effect of Various Anesthetics upon the Strength of Uterine Contractions.—M. Pierce Rucker (*Journal of Laboratory and Clinical Medicine,* February, 1925) used a Voorhees bag placed in the cervix to study the effect of anesthetics upon the contractions of the uterus. The behavior of the uterus was found to be remarkably inconstant. It would seem that all the anesthetics studied, with the possible exception of ethylene, have a tendency to diminish the force and frequency of uterine conrtactions in proportion to the amount given. This effect is less marked with nitrous oxide-oxygen, and most marked with chloroform. Secral anesthesia with novocaine is in a class by itself. Its usual effect is to stop all contractions soon after it is administered, but the contractions return with unimpaired force before the effect of the drug wears off.

Restoration of the Ability to Conceive.—Philipp Gellert (*Zentralblatt für Gynäkologie,* January 31, 1925) maintains that in the presence of functionating fallopian tubes and an absolutely intact ovary the implantation of the ovary in the body of the uterus, in addition to the operation on the adnexæ, is indicated. The technic is as follows:

The ovary is gently mobilized with the least possible injury to its vascular pedicle and inserted, together with the tubal pole, into the uterus, but not squeezed in. It is carefully sutured in place with thin catgut, being careful to avoid taking much of the ovary. With a very thin needle and a thin thread, the rupturing through of the suture may be avoided. The less the ovary is injured, the greater the hope of success.

Conception can occur only when the ova given off by the germinal epithelium which has been placed into the uterus can come in contact with spermatozoa. Rupture of the uterus need not be feared.

Dermatoses in Disturbances of Ovarian Function.—Paul Szegö (*Zentralblatt für Gynäkologie,* May 9, 1925) states that a relationship between the skin eruption and the disturbance of ovarian function may be assumed to exist under the following conditions:

1. If the constitution suggests a disturbance of ovarian function.
2. If the skin eruption and disease appeared simultaneously.
3. If the eruption disappears after the treatment with ovarian extract and the regulation of menstruation.
4. If the eruption disappears during the climacterium parallel with the retrogression of the symptoms of insufficiency.
5. When the eruption becomes aggravated on discontinuance of the treatment and subsequent impairment of the ovarian function.

Functional disturbance of the ovaries (pregnancy, amenorrhea after excision or roentgen treatment or without known cause, dysmenorrhea, oligomenorrhea, etc.) were found in eighty patients with various dermatoses. Improvement was usually manifest after the second or third intravenous or intramuscular injection of ovarian extract.

Value of Local Treatment in Uterine Hemorrhage.—Ernest Martin Fuss (*Zentralblatt für Gynäkologie,* February 21, 1925) draws the following conclusions as to the benefits to be expected from local treatment in uterine hemorrhage:

Those forms of disease of the uterine mucous membrane associated with hemorrhage which are of a chronic inflammatory nature are amenable to local methods of treatment, such as curettement and cauterization, and in the majority of cases are curable thereby. The same statement applies to the cases of atrophic mucosa in elderly women and of hyperplasia (polyps). However, in the cases of a general hyperplasia of the uterine mucosa and in those due to a functional disturbance of the ovaries, the local treatment is usually unsuccessful except in the histologically very slight cases; the success of local treatment in these cases is less the more pronounced the picture of the hyperplasia of the glandular mucosa and the more extensive the areas of diseased mucosa. In these cases cures can be accomplished only by influencing the disturbed function of the ovaries. This applies also to the hemorrhages of puberty and to adnexal tumors in younger women. In these cases, especially in the latter, better results are achieved with conservative measures, such as thermotherapy and baths, and occasionally also with operative procedures. The treatment of the hemorrhages of puberty is not rarely attended with difficulties and may necessitate a trial of irradiation of the spleen and the transplantation of ovaries. The hyperplasia of the uterine mucosa, often found as the cause of the bleeding in elderly women, except in the histologically very light cases, is absolutely refractory to local treatment and here the last refuge is the destruction of the ovarian tissue by roentgenotherapy.

Incidence of Glycosuria During Pregnancy.—Arthur Crook (*Lancet,* March 28, 1925) examined the urine of 548 patients during their pregnancy. He found that about thirty per cent. of these pregnant women passed sugar in the urine at some time during their pregnancy, and in about one third of all the cases and in about one half of those which were first detected before the fifth month it was of short duration, and not associated with other serious signs of disturbance of metabolism, while in those cases in which it appeared at about the twenty-eighth to the thirtieth week it is more often associated with signs of toxemia and more allied perhaps to the socalled renal diabetes, and in about ten per cent. of them it lasted till labor and afterwards.

In the small proportion in which the sugar appears in every pregnancy (1.5 per cent.) the proportion of definite toxemia is higher still (fifty per cent. at least), though the total number of these cases is perhaps too small to allow any conclusion to be reliable. In cases only first detected at a very late date (after the thirty-fourth week), just under three pe rcent. of them had sugar till labor, and afterwards; some of these cases were of the intermittent type. No special incidence of septic infection was noted in these patients. Though the glycosuria met with in pregnancy after the fifth month may have some relation to "renal diabetes" it does not seem to explain all the other cases (excluding of course true diabetes).

GASTROENTEROLOGY

Celiac Disease (Chronic Intestinal Indigestion).—Louis W. Sauer (*American Journal of Diseases of Children,* February, 1925) proposes the following rules for the care and feeding of celiac disease patients:

1. Hospital care is obligatory, if proper nursing care and cooperation cannot be obtained in the home.
2. Patients should be kept in bed until the weight exceeds by several pounds the child's maximum weight befor the illness began.
3. Extremes in room and outdoor temperatures must be avoided; the bedding and clothing should be suitable for the season of the year.
4. The simple, high protein (low carbohydrate and fat) diet advised consists of three phases: 1, concentrated protein milk exclusively; 2, protein milk with other protein foods (curds of buttermilk or of skimmed milk, buttermilk, eggs, lean meat and boiled tongue); 3, same as the second phase with the cautious addition of dextrinized starches (flour ball, patent barley flour, imperial granum, arrowroot crackers); the finely rolled zwieback or toast; ultimately, powdered spinach and sugars.
5. The number of calories must be ample to insure a continuous gain in weight (from forty-five to sixty or more calories per pound in twenty-four hours). At first the number of level, packed tablespoonfuls of powdered protein milk should approximate the number of pounds the child actually weighs; then gradually to approach the theoretical number of pounds the child should weigh for his height; in much retarded infants it may be necessary ultimately to use as many tablespoonfuls as the child should weigh for his age.
6. The tolerance for carbohydrate and fat should never be overstepped; fresh cow's milk, cream, butter and meat fat must be omitted for years.
7. Anorexia, abdominal distention, diarrheal or foamy stools necessitate the omission of carbohydrates, fats, fruit, vegetable and cod liver oil; after an interval of weeks or months, they may again be cautiously added.
8. In exacerbations without apparent dietary or climatic cause, parenteral infection should be searched for, as tolerance decreases during such intercurrent diseases as pyelitis, pertussis and bronchitis.

Treatment of Mucous Colic and the Colitides with Autovaccines.—Koloman von Knorr (*Wiener klinische Wochenschrift,* April 2, 1925) draws the following conclusions regarding his results with vaccinations:

1. All of the subjective and objective symptoms of mucous colic and chronic mucous colitis are relieved by autovaccine therapy. The abnormal number of colonies of intestinal streptococci and the atypical forms of colonies of the colon bacilli present before the use of vaccinations disappear at the end of the vaccine therapy. There were neither clinical nor bacteriological reactions on the part of the organism to functional tests with carbohydrate, fat, and cellulose.

2. In ulcerating acute and chronic colitis the intestinal streptococci disappear. The colonies of colon bacilli resumed their fuchsin red color and metallic lustre on endoagar. Following the vaccine therapy there develops a disease picture similar to carbohydrate dyspepsia, which can be easily influenced by the von Noorden diet or by a simple régime rich in protein and poor in carbohydrate and without sugar. In the event of a recurrence the autovaccine therapy should be repeated, but the normal colonies of colon bacillus should be omitted in the preparation of the vaccine.

3. The good therapeutic results with the autovaccine therapy can be attributed to specific reactions, as the various heteroprotein forms of therapy showed no effect. There is a marked specificity—the autovaccine from one patient shows no therapeutic result in another.

Identity of Hematoidin and Bilirubin.—Arnold R. Rich and John H. Bumstead (*Bulletin of the Johns Hopkins Hospital,* April, 1925) obtained an unusually plentiful yield of hematoidin from the hemorrhagic fluid contained in a very large cyst of the omentum removed from a child. This contained about three litres of a dark brownish red fluid, on which a van den Bergh test showed a reading equivalent to 15 units of bilirubin, while the bilirubin content of the child's plasma was so small that a quantitative estimation was impossible. The recrystallized hematoidin was subjected to the tests and reactions for the identification of bilirubin and in each instance the hematoidin behaved precisely as did a control of gallbladder bilirubin. These facts make it appear most probable that the pigment hematoidin, which is formed from hemoglobin at the site of blood extravasation, is really bilirubin itself.

A Case of Plastic Linitis.—A. H. Aaron and J. V. Wadsworth (*Buffalo General Hospital Bulletin,* April, 1925) describe a case of socalled plastic linitis in a man thirty-one years of age, marked by pain and distress coming on immediately after eating, with vomiting of unaltered food shortly after ingestion; with normal findings in the gastric juice, absence of occult blood in the gastric contents and in the stools; and the presence of a tumor mass in the epigastrium. Roentgenographically, there was considerable narrowing of the prepyloric area with no dilatation behind it. The stomach, as observed at the first operation, was the seat of a uniform sclerosis occupying chiefly the pyloric two thirds. Its size became rapidly reduced, as seen at the third operation, and the sclerosis was found to involve practically the entire organ. The mucous membrane, as far as could be determined at operation as well as at the examination of the resected portion, was intact. Histologically, the stomach showed extreme fibrosis affecting all the coats, especially the submucosa, and the presence in places of peculiar large cells which were identified with degenerated epithelial cells representing a carcinoma. From a review of the literature there appears to be no definite proof of the existence of a true linitis in the sense of Andral, Cruveilheir, and Brinton.

Argentaffine Tumors of the Appendix and Small Intestine.—Wiley D. Forbus (*Bulletin of the Johns Hopkins Hospital,* August, 1925) reviews the literature of carcinoma or carcinoids of the gastrointestinal tract, and presents six cases of socalled carcinoma of the appendix and small intestine. The argentaffine or chromaffine character of the cells of the tumors, originally described by Gosset and Masson, is confirmed. The carcinomas or carcinoids of the appendix and small intestine have their origin in the cells of Kultschitzky and Schmidt of the crypts of Lieberkühn and threfore are tumors of the chromaffine system, and may be spoken of as argentaffine tumors because of the peculiar ability of the granules of the tumor cells to reduce an ammoniacal solution of silver. The importance of differentiation between the argentaffine tumors and a peculiar form of adenocarcinoma of the appendix and small intestine, which is superficially similar to the argentaffine tumors, is emphasized. The tumors may be single or multiple, never produce symptoms or signs, and are of generally harmless character. In the author's six cases, three were found at autopsy and three at operation because of symptoms pointing to an inflammatory condition of the appendix.

Foreign Bodies in the Abdomen.—P. R. Rowlands (*Clinical Journal,* February 18, 1925) says that when a foreign body is suspected and the wound is opened up freely and explored, the body can generally be recognized by sight or touch, and can be removed, as a rule, without causing any damage. Sometimes it lies in a cavity among coils of intestine, but it may be partly in and partly outside the bowel. Whenever practicable the opening in the bowel should be closed, but this is not always possible. It is then better to drain the wound with a temporary fecal fistula, which generally closes. Failing this, the fistula may be closed by a subsequent operation, care being taken that no obstruction exists below. Drainage of the parietal wound is nearly always necessary on account of suppuration around the foreign body.

The Misuse of Cathartics and Laxatives.—John W. Dewis (*Boston Medical and Surgical Journal,* July 23, 1925) expresses the essence of his paper in one sentence which deserves to be printed in capital letters: It is dangerous to prescribe cathartics in acute or painful conditions of the abdomen; it is wrong to administer them before abdominal operations; it is injurious habitually to give them in constipation; and bad practice to order purgatives without knowledge of their various physiological effects, or to recommend them for patients when not sure of the ailment.

Diuretic Action of Bile.—A. Landau and J. Held (*Presse médicale,* March 14, 1925) noted accidentally that in some cases of edema of renal origin, the output of urine was greatly increased upon oral administration of bile, with the result that previously refractory edema was dispelled. Their experience now comprises eight cases of edema in glomerulonephritis or nephrosis and three cases of edema of cardiac origin. In the renal cases the output of urine was sometimes increased four or five times. The dose is one gram of bile four times a day in cachets or capsules after meals. Where it is desired to prevent undue diarrhea, bismuth subcarbonate or subnitrate, or tannalbin, in doses of 0.25 to 0.75 gram several times a day, according to effect, is given. The diuretic effect is ascribed to the lymphagogue action of bile. Asher observed increased flow in the thoracic duct upon intravenous injection of sodium glycocholate and of hemaglobin, while they were acting as cholagogues. This lymphagogue effect leads to a temporary dilution of the blood at the expense of the tissue fluids.

The Extrahepatic Formation of Bile Pigment.—Arnold Rich Rice (*Bulletin of the Johns Hopkins Hospital,* April, 1925) report experiments which confirm the demonstration of Mann, Bollman and Magath that the formation of bilirubin can proceed in the complete absence of the liver and all the other abdominal organs from a dog, if the circulation be maintained through the entire musculoskeletal system, the plasma, which immediately after the operation is colorless and contains no detectable trace of bile pigment, may become yellow in color after some hours and give a positive test for bilirubin; that the bilirubin may increase gradually in amount in the plasma, and that a definite tissue jaundice may develop after the lapse of sufficient time.

The Redundant Colon.—Franklin W. White (*Medical Clinics of North America,* March, 1925) states that in the treatment of redundant colon the bowel must be treated kindly and let alone as far possible; the patient rarely sees this, and has usually "beaten them up" with a long course of laxatives and cathartics, which have only added to the irritation and spasm, and often made matters worse. A bulky diet is essential, giving plenty of cooked fruit pulp and mashed vegetables, which are often better than coarser food, such as bran and raw vegetables, when there is much irritation of the bowel. Instead of irritating cathartics, we should lubricate the bowel from above and below by mineral oil by mouth and injections of six ounces of oil at bedtime, which are retained, if possible, overnight. Enemas should be avoided if possible, and only occasionally should there be used bland enemas of bicarbonate of soda, two teaspoons to the quart of warm water, which is far less disturbing than the usual suds enema. Rest and tonic measures are needed for the tense, nervous patients, and occasionally sedatives and belladonna.

The author found the results of such treatment to be very satisfactory in a large majority of his cases, especially those of mild and moderate grade, and even in some of the severe cases. Röntgenography teaches that we can never expect to make redundant colons anatomically normal, but we can often restore normal function and make the patient symptom free. There is always an accidental feature in these patients. Some of the worst cases with the largest and longest loops may go for long periods without chronic symptoms or an acute attack. No surgery, such as fixation of the colon or resection of loops, has been attempted by the author, as it seemed likely to make matters worse. It is possible that in a rare chronic case a resection of a long troublesome sigmoid loop might be profitably done. A twist of the sigmoid (volvulus) with serious acute obstruction requires immediate surgery.

Colon Bacillus Infection.—A. Basil Rooke (*Practitioner,* September, 1925) says that colon bacillus infection is prevalent and is the cause of a great deal of chronic ill health. The stage of invasion is usually ushered in by an acute febrile illness, but it may be insidious in its onset. The condition tends to become chronic. Relapses or re-infections are the rule rather than the exception. The majority of cases are associated with colitis. Gross lesions such as appendicitis, cholecystitis and renal infections are extremely common. Toxic manifestations, such as irregular heart action, mental depression, and derangement of the thyroid, frequently occur. Treatment must be directed towards improving the condition of the intestine, and increasing the patient's resistance. In order to prevent the disease from becoming chronic, treatment must continue for a long period after all signs and symptoms have cleared. It is as necessary for the Bacillus coli infected patient to have the urine examined from time to time as it is for the syphilitic to have repeated Wassermann tests.

Resistance of the Antirachitic Substance in Codliver Oil to Reagents.—Charles E. Bills (*Journal of Biological Chemistry,* May, 1925) presents the first of a series of experiments on the chemical examination of antirachitic substances. The antirachitic vitamine D was not affected by the influence of hydrogen dioxide, hydrogen sulphide, sulphur dioxide or formaldehyde. Nitrous fumes, however, readily destroyed its potency, and its activity was slowly destroyed by direct steam or contact with mineral acids.

Studies with Bacillus Acidophilus and Bacillus Bulgaricus. I. Preliminary Attempts at Implantation of B. Bulgaricus.—Nicholas Kopeloff and Philip Beerman (*Journal of Laboratory and Clinical Medicine,* August, 1925) administered to twelve women (seven constipated and five non-constipated) milk fermented by the same strain of Bacillus bulgaricus, giving one litre of milk a day in addition to the regular hospital diet for fifteen days. Three fecal examinations at three day intervals were made during treatment, and two after treatment. Of these twelve, only two subjects showed Bacillus bulgaricus; both of these were non-constipated to begin with. Since the bacteriological content of the milk fed was only fifty million to the c.c., the authors believe that further corroboration of the failure to implant Bacillus bulgaricus is required, when using the same dose of milk containing about two hundred million to the c.c., as is recommended in the feeding of Bacillus acidophilus.

Pyloric Stenosis of Infants.—A Statistical Analysis of Sixty Cases.—Wilburt C. Davison (*Bulletin of the Johns Hopkins Hospital,* August, 1925) presents a statistical study of sixty cases of pyloric stenosis in infants in relation to the following factors: symptoms, physical signs, sex, color, age at onset, birth order, type of onset, general condition of the patient, interval between onset and admission to the hospital, previous diet, birth weight, loss or gain in weight since birth, weight and age on admission to the hospital, and the month of onset. Thirty-two of the patients were treated medically, and twenty-eight surgically. The following conclusions are presented: The frequency of the condition was highest among white, male, first born infants of normal birth weight. The case fatality was highest among those who were not constipated, whose onset was sudden, who weighed less than seven pounds at birth and on admission, and who had lost the most weight since birth. No fatalities occurred among infants who were overweight at birth or who had gained in weight between birth and admission to the hospital. The fact that the case fatality rate was slightly higher in the surgical than in the medical group is no reason that all infants with pyloric stenosis should be treated medically, but it is a good argument against operating on all these patients as soon as the diagnosis is made, as some surgeons have maintained. The following recommendations are made: to operate on all patients who are in such bad condition on admission to the hospital that delay would be fatal; to try medical therapy where the condition is not critical, and to operate on patients in whom medical therapy is not producing any improvement. By such selective therapy, rather than by exclusively surgical or medical treatment, the total case fatality rate can be lowered.

Habitual Vomiting in Infancy.—H. C. Cameron (*British Medical Journal,* May 9, 1925) states that for a time to distract the infant's attention seldom fails, but always to carry the infant around after meals or to arouse its interest by means of rattles or musical boxes is apt ultimately to exhaust both nurse and child. The simple method of plugging the nostrils has sometimes achieved success. It is further recommended that the infant should always be placed upon the abdomen after a meal. Others have endeavored to prevent rumination by forcible closure of the mouth. Probably the most uniform success has been achieved by thickening the child's food to a consistency of a thick gruel.

Rumination, like aerophagy, like the vomiting due to idiosyncrasy for cow's milk, and like the vomiting of unrest, is found most commonly among infants of psychopathic inheritance and in a psychopathic environment. Isolation, handling by a competent selfconfident nurse, the reduction of emotional disturbance to a minimum, are all of the greatest importance if recovery is to follow.

Gastric Function in Health and Disease.—John A. Ryle (*Lancet,* March 28, April 4 and 11, 1925) recapitulates as follows:

There are two main types of dyspeptic reaction—the immediate and the delayed (or those associated with a recently filled or an emptying stomach). The causal or provocative factors are also of two main types, the pressor and the depressor. The dyspeptic reactions are determined in part by these causal factors, but in part also by the physiological type or gastric habitus of the individual, and the gastric habitus again (when variant from the normal) is of two main types, the hypersthenic and the hyposthenic.

Immediate pain or discomfort is the common response with the hyposthenic habitus and in dyspepsias resulting from depressor influences. It is thus encountered more frequently in the female sex and in association with general debilitating diseases. It may also be encountered in the irritative dyspepsias if these develop in a patient with the hyposthenic habitus or with general debility; under such circumstances the syndrome of gastric ulcer may be reproduced.

Delayed pain or discomfort is the common response with the hypersthenic habitus or in dyspepsias resulting from pressor influences. It is thus encountered more frequently in the male sex and in association with central or reflex irritative causes. If any of these causes are present in association with the hypersthenic habitus the symptoms of duodenal ulcer may be reproduced. The more circumscribed the focus of irritation and the more nearly it is situated to the stomach the more sharply defined do the symptoms become, but even in a "worry" or a "fatigue" dyspepsia we can sometimes detect the character of the ulcer syndrome. If an irritative focus is developed in association with the normal habitus, which is present in from seventy to eighty per cent. of the population, the liability to dyspeptic symptoms is less than in the extreme physiological types and local symptoms are more in evidence.

Finally, whether we are concerned with clinical symptoms, such as pain or nausea, or with radiological or chemical symptoms, such as hypertonus, hypotonus, hyperchlorhydria, or hypochlorhydria, it is important to appreciate that each response expresses merely an exaggeration or depression of a normal reflex. The dyspeptic reaction cannot of itself inform us as to the exact nature of the underlying disease, any more than dyspnea or tachycardia can inform us as to the exact physical condition of the heart or the causes disturbing its function. Nevertheless an estimate of the nature and degree of the functional derangement is essential both for the diagnosis and prognosis, and may materially influence the choice of treatment.

Drainage of the Thoracic Duct in Experimental Peritonitis.—Bernhard Steinberg (*Journal of Experimental Medicine,* July, 1925) undertook these investigations to determine whether or not an animal with an experimentally produced and ordinarily fatal peritonitis can be kept alive by the drainage of the thoracic duct; and whether or not bacteria are transported through the thoracic duct into the general circulation. The method of Jappelli and Lee, somewhat modified, in which the innominate, subclavian and internal jugular veins are ligated was used to secure a continuous flow of lymph from the thoracic duct. For the induction of peritonitis gum tragacanth and Bacillus coli were injected. Drainage of the thoracic duct did not save animals from peritonitis otherwise fatal. Under the conditions of the experiments the thoracic duct did not serve in any important way as a drainage tract for bacterial contamination of the peritoneal cavity.

Treatment of Pyloric Stenosis in the Infant.—Leon Velasco Blanco (*Archivos Americanos de Medicina,* July, 1925) in reporting three cases of pyloric stenosis in early infancy remarks that this is a rare condition in South America, and thinks that racial factors may be involved. Duodenal catheterization, as advised by Hess with intestinal feeding through the catheter, is the treatment of preference even in the severe cases. With this treatment the majority of cases are cured without operation, and no surgical procedure should be undertaken until Hess' method has had a fair trial. When an operation must be done the best results are obtained by the Fredet-Rammstedt method.

Antiscorbutic Properties of Eggs.—Sigfred M. Hauge and Carey W. Carrick (*Journal of Biological Chemistry,* May, 1925) state that egg whites fed to guineapigs in quantities as large as twenty c.c. daily delayed the symptoms of scurvy no longer than did the basal ration. Egg yolk proved equally ineffective when given at the rate of fifteen c.c. daily. The therapeutic action of egg portions was also negative. Therefore the presence of the antiscorbutic properties in eggs of hens is not demonstrated by these experiments, and the statement of McCollum that "egg yolk is at least comparatively rich . . . . in water soluble vitamine C" is not supported by this work.

Effect of Constipation and Catharsis on Urobilinuria.—R. S. Dean (*Journal of Laboratory and Clinical Medicine,* June, 1925) found an increase in urobilinuria during constipation, and a decrease with catharsis. A case of cirrhosis of the liver proved the only exception to this rule. From several of the cases studied, the presence or absence of fever had a decided effect on the urobilinuria.

NEUROPSYCHIATRY

Babinski or Extensor Form of Plantar Response in Toxic States Apart from Organic Disease of the Pyramidal Tract System.—T. R. Elliott and F. M. R. Walshe (*Lancet,* January 10, 1925) summarize their findings as follows:

1. An extensor plantar response characterizes the toxic state of coma without epileptiform fits (cholemia) that may arise when the metabolic functions of the liver are seriously impaired by acute or chronic diseases of that organ.
2. An extensor response does not occur in diabetic coma, nor in uremia except when the latter is associated with epileptiform fits. It has been seen in eclampsia wtih fits.
3. Delayed chloroform poisoning, sulphonal poisoning, and coal gas poisoning may all lead to the appearance of an extensor response in the absence of any organic lesion of the pyramidal tract.
4. Scopolamine will convert a flexor response into an extensor type in cases where the pyramidal tract system is only slightly affected and the drug may therefore be used to unmask a latent or equivocal extensor reflex.

Diagnosis of Incipient Insanity in Young Adults.—H. S. Le Marquand (*Lancet,* March 7, 1925) confines himself in his remarks to the diagnosis of dementia precox because it is a disease usually seen first by the general practitioner and because it is not always recognized by him.

Dementia precox is a common mental disorder in young adults. Following an insidious onset, it runs a prolonged course. The patient exhibits an inability to grapple with his environment, a consequent turning away from reality to live in a phantasy world of his own, with a progressive terioration affecting primarily his emotions and ultimately his intellect in addition. This insidious onset causes considerable difficulty to an early diagnosis because the condition is liable to be mistaken for one of the common neuroses. The diagnosis between dementia precox and these conditions is important because: 1, the different prognosis and treatment in the two cases; 2, the desirability of early investigation of dementia precox; 3, the probability of extension of facilities for treating early cases.

The diagnosis of dementia precox mainly rests on; 1, considering carefully the history of the case with the development of the personality of the patient; 2, the recognition of the typical mental symptoms and physical signs, the most typical of which are the emotional apathy, loss of energy and poor circulation in the extremities.

Difficulties in the Diagnosis of the Acute Phase of Epidemic Encephalitis in Children.—James L. Halliday (*Lancet,* April 11, 1925) states that in children the diseases most liable to be confused with early encephalitis are: gastroenteritis, tuberculous meningitis, and pneumonia. Examination of the cerebrospinal fluid will always exclude meningitis, and in certain cases will establish a diagnosis of encephalitis. In gastroenteritis the gastrointestinal symptoms are often overlooked on account of others suggesting a disease of the nervous system, such as headache, delirium, drowsiness, sighing respirations, and pseudoptosis. Pneumonia in its early stages before the development of physical signs in the chest may be mistaken for encephalitis when it is ushered in by convulsions, twitchings, delirium, meningism, drowsiness, vomiting, and pain in the side. On the other hand, pain in the side, a cough and rapid respirations may be the first symptoms of encephalitis.

Multiple Osteomyelitis Due to Bacillus Paratyphosus B.—George L. Carrington, and Wilbur C. Davison (*Bulletin of the Johns Hopkins Hospital,* June, 1925) report the case of a colored boy eight years old admitted with a temperature of 100°, rising to 106° seven hours later, with a definitely enlarged spleen and liver, and slightly swollen and tender right elbow and lower end of right humerus. Because of the enlarged spleen and possibility of malaria, a preparation of fresh blood was examined and two actively motile bacilli were seen. A blood culture made immediately thereafter showed bacillus paratyphosus B. The case is reported because of the unusual microscopic observation of motile bacilli in fresh blood preparations, and because of the rarity of such extensive osteomyelitis due to infection by bacillus paratyphosus B which involved the right humerus, radius and ulna, both fibulae, the left ulna, and scapula, and the third to ninth ribs on both sides at intervals during a period of two months.

Malarial Treatment of General Paralysis.—G. Marinesco and S. Draganesco (*Bulletin de l'Académie de médecine,* March 31, 1925) report their experiences with malaria inoculation in six cases of general paralysis, one taboparalytic case, and one case of tabes with amaurosis. The treatment is undoubtedly of value, though its mode of action is as yet unknown. Fever doubtless plays a rôle by immobilizine the spirochetes. Jahnel found that paretics who had had fever two or three days before death showed no spirochetes in their nervous system. Leucocytosis, products of the destruction of spirochetes and antibodies formed during the treatment are factors calculated to stimulate the defensive forces of the system. The writers do not believe, however, in an actual correction of the degenerative lesions of the nervous system. This is confirmed clinically in that even in cases cured from the viewpoint of social behavior some degree of mental deficiency persists. Tertian malaria should always be preferred to tropical malaria in this treatment, the latter sometimes causing serious symptoms. Of the malarial blood, collected during the chill two mils are given intravenously and four subcutaneously. The incubation period ranged from seven to eighteen days. In general the inoculation was well borne, although in one case jaundice appeared and necessitated arrest of the fever with quinine. In another case intense restlessness and mental confusion were observed during the malarial paroxysm, but disappeared as the fever subsided. Two patients had sphincter disturbances during the attack, and in the tabletic there were severe lancinating pains during the chill and even after the end of the paroxysm. An intriguing feature was the spontaneous cessation of the paroxysms. In one case the fever disappeared after the second paroxysm, and in three others, after the sixth or seventh; attempts to reproduce the paroxysms by injection of blood from malarial cases failed. In the other cases, the paroxysms were readily ended by daily administration of 1.2 grams of quinine for eight or ten days.

Section of the Sensory Root of the Trigeminal Nerve at the Pons.—Walter E. Dandy (*Bulletin of the Johns Hopkins Hospital,* February, 1925) sectioned the sensory root of the trigeminal nerve alongside the pons in two cases of tic douloureux. The approach to the nerve in this region is through the posterior cranial fossa; in all other operative procedures the sensory root is approached from the middle cranial fossa. The technic is described step by step. The advantages of this procedure are the ease of approach to the sensory root, largely due to the bloodless intracranial course; after entering the dura a free space without vascular crossings extends directly to the brain stem; the seemingly easier preservation of the motor root. Its great disadvantage would appear to be that the operation is intradural and that for this reason the effects of trauma from any undue retraction of the cerebellum and the difficulties incident to any unexpected bleeding would be serious. Whether these potential dangers prove to be actually greater than in other operations remains to be seen.

Chronic Pelvic Pain in Relation to Neurasthenia.—R. P. Ranken Lyle (*British Medical Journal,* January 17, 1925) believes that chronic pelvic pain in relation to neurasthenia is of very great importance because of the fact that large numbers of unnecessary operations have been performed for this condition, owing to the operator not recognizing the general condition of the patient and ascribing all the various symptoms complained of to some little pelvic abnormality, which could not in any way, even with the most vivid imagination, be rightfully attributed as the cause of the general condition. In other words, operations are being performed from an entirely wrong diagnosis. These operations are not only altogether devoid of danger, but they subject the patient to the risk of serious complications later on, and even at the very best they accentuate the patient's sufferings and often drive her to seek medical advice elsewhere.

Of c urse when cases of chronic pelvic pain are associated with definite physical signs, such as in pyosalpinx, there is generally no trouble in associating the pain with the physical signs, but such cases only form a small percentage of patients. The largest percentage of patients who complain of chronic pelvic pain generally have nothing abnormal in the pelvic at all, or perhaps some minor condition, such as a mobile backward displacement of the uterus, which is frequently wrongly regarded as a cause of the pain.

Often a careful examination of the pelvis and an assurance that the patient has no pelvic disease, and that the condition is merely due to worry or nervousness or constipation, will make the patient feel quite well. Other patients may require a mixture of potassium bromide and magnesium sulphate, together with fresh air and outdoor exercise, telling them not to become tired or fatigued and to stop worrying. This often is all that is required.

Contributions to the Pathology of Experimental Virus Encephalitis. I. Simon Flexner and Harold L. Amoss (*Journal of Experimental Medicine,* February, 1925) report experiments on rabbits with a virus isolated from the cerebrospinal fluid of a patient suffering from vascular and neural syphilis, who had been under continuous observation for more than two years, and who never presented symptoms of epidemic encephalitis. This virus, on the one hand, was indistinguishable from the socalled virus of encephalitis, and on the other, from the virus of febrile herpes. Twenty-seven samples of cerebrospinal fluid from cases of epidemic encephalitis were tested on rabbits with negative results. The authors propose the name "virus encephalitis" for the experimental disease produced in rabbits by the inoculation of the herpes and allied viruses.

II. In this paper Flexner and Amoss show by experiments with the H. F. virus described that the virus is markedly neurotropic and at the same time readily implantable upon the cornea and skin of the rabbit. They state that unequivocal strains of herpes virus exist in man, which, in the rabbit, exhibit a degree of encephaliticogenic power not exceeded, and perhaps rarely equalled, by any strain of the socalled encephalitis virus.

III. Varieties and Properties of the Herpes Virus.—Simon Flexner and Harold L. Amoss (*Journal of Experimental Medicine,* March, 1925) observe from a series of attempts that the detection of the true herpes virus in the buccal secretion of man is accomplished rarely and with difficulty. Their single successful instance of the isolation of a strain of the virus was obtained by the intratracheal method, which is suggested for such studies rather than that of intracorneal inoculation of the rabbit. A comparison of the Levaditi, Doerr, and Goodpasture strains of virus shows the first to be of medium, the second of mild, and the third of a high degree of neurotropic activity. The Doerr strain resembles the mild herpes strains described in this paper. Comparison of the clinical types of encephalitis in the epidemic form in man, and the experimental virus variety in rabbits brings out certain similarities and certain differences. It is only in partial and essentially superficial aspects that the two diseases can be identified with each other.

Headaches.—Henry W. Woltman (*Medical Clinics of North America,* January, 1925) states that in studying a case of headache, it is important to obtain a careful history. Seven points, at least, should be ascertained: 1, location of pain; 2, duration; 3, frequency; 4, character; 5, intensity; 6, course; 7, associated symptoms and relation to other functions.

Careful and complete examination is indicated. It should be determined, if possible, whether the headache is the expression of: 1, organic disease involving structures of the head; in this connection the aid of the ophthalmoscope should never be neglected; if brain tumor is a possibility, the pulse should be noted carefully for slowing in rate and irregularity, and the occurrence of precipitate vomiting inquired into; the organs of special sense call for investigation, and the skull should be palpated, and an x ray examination made; 2, toxic factors, especially nephritis; 3, circulatory disturbances, especially hypertension; 4, migraine and its variations; here we are dealing with the patient rather than with the cause; 5, psychoses, psychoneuroses, neurasthenia, and exhaustion; the emotional behavior and daily habits of the patient should be ascertained; and 6, neuralgias; not every pain is neuralgia.

Combinations of the foregoing conditions are possible. In certain cases the patient may require observation for a prolonged period before a diagnosis can be definitely established.

Influence of Sexual Developmental Stages and Processes on Otosclerosis.—Conrad Stein (*Wiener klinische Wochenschrift,* January 29, 1925) concludes that when physiological and pathological processes of the genital apparatus develop in an individual predisposed to generally degenerative changes, in whom the auditory apparatus is also constitutionally insufficient, an injury of this auditory apparatus should always be suspected. The possibility of such an endogenic involvement is seen from the fact that within the picture of such a status degenativus the whole series of organs and apparatus, which ought to enhance the normal structure and functional power of the auditory apparatus, are functionally or organically involved as parts of this pathological condition.

The author emphasizes the predominant involvement of the female sex, the influence of menstrual disturbances, of pregnancy and the climacterium and the course of the disease. In males, the significance of sexual neurasthenia, and in both sexes the influence of abnormal sexual life deserve special mention. Constitutional insufficiency, neuropathy and disturbances of internal secretion are found in various combinations with otosclerosis. Therefore, the treatment must be arranged in accordance with the conditions found in each case, and strict individualization is always indicated.

Ophthalmological Findings in Cases of Multiple Sclerosis.—John F. Gipner (*Medical Clinics of North America,* January, 1925) states that in multiple scelrosis, changes in the optic nerve are often early objective signs of the disease. About fifty per cent. of the cases show changes in the disc, the most frequent change observed being a generalized pallor of the disc without loss of nerve substance. Simple optic atrophy, definite temporal pallor, and questionable temporal pallor are infrequent findings, each occurring in about the same proportion of cases. Disproportionality between the appearance of the fundus and the central and peripheral visual acuity is characteristic of multiple sclerosis. The generalized pallor of the discs may confuse this condition with tabetic atrophy, and the cases with acute retrobulbar neuritis present the same picture as those in which there is toxic neuritis due to alcohol, tobacco, and accessory sinus disease.

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Medicolegal Notes.

Father's Liability for Physician's Services to Adult Daughter

An action by a physician for services to defendant's daughter presented the question of whether the parent is liable for necessaries furnished his adult daughter, living in his home as a member of his family, at a time when she is sick and unable to earn a living. The daughter was about twenty-three years of age, but had never had employment or earned her living. She was under the physician's care about eight months, six weeks of which she spent in a hospital. She and her father were not on friendly terms, never speaking to each other except when absolutely necessary. The mother was also estranged from the father, although they lived in the same house.

The mother and daughter went to the doctor's office when his services were engaged. Nothing was said as to who would pay the bill. The doctor never went to the parental home, and the father never knew of the doctor's employment until long after most of his services had been rendered. He did not authorize or direct his daughter or wife to engage the physician or consent to his engagement, or promise or agree, directly or indirectly, to pay for the services.

From the authorities cited by the parties, the Kentucky Court of Appeals, Breuer v. Dowden, 268 S. W. 541, deduced the rule to be that "a parent is not liable for the debts of his adult child in the absence of a statute to the contrary, unless the child in such a feeble and dependent condition physically or mentally as to be incapable of supporting himself; that if at the time the child becomes of age he is physically and mentally sound and able, if willing, to make and earn his own support, the parent is not liable for his debts or obligations thereafter contracted, even though he should later become sick or mentally unbalanced and therefore incapacitated to earn a livelihood. If, however, the child at the time of his arrival at the age of twenty-one is sick or otherwise incapacitated to earn a living for himself, and is, at the time, living in the home of the parent as a member of the household, the parent is liable for the necessaries furnished him."

"If it appeared," the court said, "from the evidence in this case that the adult daughter of appellant who lived in the home as a member of the family was physically or mentally incapacitated to earn her own livelihood at the time she arrived at her majority, and that this disability continued until the employment of appellee physician, we think his cause would be maintainable, but in the absence of such a showing we must hold that the father's liability for the debts of his adult daughter, even for necessities, terminated on her arrival at the age of twenty-one years, and having once terminated cannot be revived even though she became sick and incapacitated while continuing as a member of his household.

"It must not be overlooked that the physician was engaged by the daughter without the knowledge or consent of the father, and that the first bill he rendered for services was made out and forwarded to her. When received by the daughter she immediately, without consulting her father, called at the physician's office and told him that she had nothing with which to pay him, and that she expected her father to pay the bill for her. Thereupon the physician mailed the bill to the father and requested payment. These facts make it certain that the services were rendered to the daughter upon her credit, and that credit was not extended to the father.

"We are also of opinion that the mother had no authority as agent of the father, under the facts of this case, to engage the physician to perform services for her adult daughter, if indeed she did attempt to make such engagement."

For these reasons judgment for the plaintiff was reversed.

Expert Opinion Based on Statements as to Subjective Conditions Held Incompetent

In a personal injury action the Kentucky Court of Appeals held, Illinois Central R. Co. v. Townsend, 267 S. W., 161, that expert medical testimony as to plaintiff's injuries, consisting wholly of opinion based, not on objective symptoms, but on statements made by the plaintiff on examination by the physicians, not for treatment, but for the purpose of testifying at the trial, was incompetent.

It was also held that a question to such medical witness whether the subjective conditions be found could have resulted "from sudden shock or the application of force to the body," was improper, when under the evidence, the occurrence of a sudden shock was problematical, and there was no direct proof that any force had been applied to plaintiff's body. The proper question, the court said, would have been to have incorporated the facts as to how the collision occurred, as testified by the plaintiff, and have the witness give his opinion based upon these facts.

A question based upon the assumption that plaintiff's injury, whatever produced it, produced the conditions discovered by the witness was also held improper. The question should have been based upon the testified facts as to how the collision occurred, and then inquired of the witness whether such facts could have produced the conditions, and whether they were or were not permanent.

X Ray in Case of Fractured Hip

The California District Court of Appeals, Second District, holds, Pearson v. Crabtree, 232 Pac., 715, that an x ray specialist, in the treatment of a fractured hip by the use of the x ray, was only required to use such reasonable care, skill and diligence as are usually or customarily exercised by others in the same line of practice and work in similar localities, or in the same section of the country; and that the testimony showed that it is not customary in the case of a fractured hip to take pictures of both hips unless something arises to make it necessary, and that it is not done in all cases.

Assessment on Cities for County Tuberculosis Hospital

By Massachusetts St. 1924, c. 443, Newburyport, together with four other municipalities, was included within the Essex County tuberculosis hospital district and rendered liable to assessments therefor. The Massachusetts Supreme Judicial Court holds, County Commissioners v. Mayor of Newburyport, 147 N. E., 901, that the statute confers upon the county the right of action by contract to recover the assessment imposed upon the city by Sec. 3 as its proportion of the initial cost of construction of the hospital.

Disease Held Not Shown to Be Result of Accidental Injury

The Indiana Appellate Court, U. S. S. Lead Refinery v. Devetak, 147 N. E., 926, reversed an award of compensation by the Industrial Board, where claimant's own witnesses, medical experts, described his ailment as a disease, eczema, and were enable to say that it resulted from the conditions of his employment; the court holding that the board was not justified in finding that the claimant was entitled to compensation because of an accidental injury received in the course of his employment.

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Proteins and Human Metabolism

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Proteins in conjunction with water and the mineral salts are the constructive agents constituting animal life.

During intrauterine life every element entering into the construction and maintenance of the embryo is derived directly from the animal kingdom. The proteins after birth are obtained from both the animal and vegetable kingdoms, but directly after birth, entirely from the animal. Proteins derived from the animal kingdom are the most easily assimilable into the human body tissues. Those coming from the vegetable kingdom are more difficult to assimilate and in many instances a high percentage of proteins of vegetable origin can under no circumstances be converted into the human body tissues.

Therefore from a purely economical viewpoint animal proteins are the most valuable, for they are more easily digested as well as assimilated, all of which is accomplished with a very low percentage of loss from the total amount ingested; the reverse is true when vegetable proteins are used. Witness a single fact when the human economy is, so to speak, dangerously ill from any cause, and without any knowledge of chemistry or physiology on the part of the general public, simple common sense, horse sense, socalled, taught people that food of animal origin, such as milk, eggs and meat broths, was the food most likely to enable Nature to effect a cure.

Another highly important fact in connection with the proteins is that some are probably the socalled vitamine principles—substances recently brought to the attention of scientists under this name and largely heralded to the world by the daily press. To my mind it is a fact that certain proteins constitute these socalled vitamines—substances which are so essential to perfect nutrition, especially since the overrefinement of most food products. These vitamine principles by this overrefinement have been withdrawn or extracted from food products. Before this superrefinement of food stuffs the animal economy received these lifegoverning principles as Nature intended, and their utility was not discovered. It is highly probable that these vitamine proteins are simply different isomeric forms of the protein molecule. That they exist in both the vegetable and animal kingdoms is unquestioned, but in such minute quantities that they have never been isolated nor their identity fully established from a purely chemical viewpoint and possibly never can be so identified. They have, however, from a physiological and nutritive viewpoint, been fully established both as to their existence and the necessity for their presence in our food products. It has further been demonstrated that it is their presence and actions that control perfect assimilation and normal growth. In these almost infinitesimal quantities they unquestionably act upon the general oxidation and assimilative processes in one of two ways. As activating or inhibitory agents, so that by this double action, as it were, they keep the chemical and physiological processes constituting animal life, in perfect harmony and equal balance under all circumstances and conditions. Deprive the system of their actions, and disease and death ensue.

From the time proteins were discovered and their functions somewhat understood, endless research work has been carried on to determine if possible a fixed amount of protein that must be supplied to the system daily to constitute and maintain the condition generally recognized as perfect health. Upon careful consideration it must be clear to all observers that no absolutely fixed quantity can be given exactly, for difference in size and construction of individuals must vary the amount of protein required.

Likewise, the physical and mental work performed must vary the demand, so that each individual becomes, as it were, a law unto himself or herself, continually changing also as the hours and days go on. General averages may be established up to a certain limit. Up to the present time, however, no extremely satisfactory result has been recorded with sufficient uniformity to be fully satisfactory.

The daily amount of protein has been placed as low as eighty grams by some observers and as high as 242 grams by others. This on the face of it is a pretty wide difference for the average development of human species. Humanity as a class does not show quite so wide a difference in construction nor in the work it accomplishes.

Such differences might be admissible if a Tom Thumb were pitted against a supergiant, but not for the average of mankind as generally observed. Therefore some correction or adjustment must be made to determine somewhat practically how much protein must be ingested daily to maintain a perfect and well balanced diet. The term well balanced diet is very freely used by many, while few fully realize

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just what is or should be expressed by so simple a term. The expression well balanced diet covers a complex problem.

First. It is one in which the amount of food ingested must be kept, first of all, well within the oxygenating capacity of the system, be that capacity normal or abnormal.

Second. It must be one which furnishes the requisite amount of heat energy perfectly to energize the chemical and physiological activities of the animal economy.

Third. It must be one in which the requisite amount of heat energy is developed along the enterohepatic circuit, and at the same time just the right amount of heat energy along the cardiopulmonary circuit, so that perfect harmony of heat energy from these two great furnaces of the human system, as it were, is carried up to and reflected back from the cerebral and spinal system of the great nervous mechanism and will be such as automatically to keep in harmonious motion all the functions and actions of the various organs of the body.

Fourth. With the growing offspring sufficient proteid material, preferably of animal origin, must be supplied to make good the daily loss of this material and still have enough left so that additional protein elements can be accumulated within the system until growth is accomplished. Once fully grown, just enough protein must be supplied during every twenty-four hours to yield some heat energy and make good the daily loss of protein due to general wear and tear. The only manner in which this loss of protein material can be estimated is by determining the amount of nitrogen eliminated in the normal endproducts of proteid oxidation. When the reduction is perfect the individual is normal; imperfect products indicate abnormalities and degrees of abnormality. This must be done for each of every twenty-four hours.

Fifth. In conjunction with the glucose, fats and proteins, there must also and at the same time be supplied the requisite amount of water and certain inorganic elements. These inorganic or saline compounds are absolutely necessary for perfect digestion, assimilation, alkalinization, and construction and maintenance of the bones. It is quite recently that their full importance and just how they act have been explained.

Sixth. One salt, disodium monohydrogen phosphate, is absolutely essential for perfect digestion and to maintain perfect alkalinity of all the body fluids and tissues; and last, but not least of its activities is its power to fix or hold the calcium or lime elements in fixed relation to the protein substances, thus forming the perfect bones, teeth and all hard structures of the body. To emphasize this particular salt and its action it is best designated as a fixator (1). If there is an abundance of available calcium, without the right amount of this fixator, bones and hard structures can not be perfectly produced. By these varied actions this particular chemically pure salt is one of the great inorganic regulating elements in connection with perfect oxidation and reduction of all oxidizable substances introduced into the body. One thing especially must be remembered: that no other alkaline substance can be substituted for this particular preparation. This inorganic fixator, like the vitamines of the organic kingdom, might be classed as the inorganic element, aside from water, most essential to perfect metabolism and growth. When all the above conditions have been completely met we are justified in using the term perfect and well balanced diet. The object of dieting is not to starve or fatten, but to arrange all the above ingredients in such manner as to secure the most perfect result, both in health and disease.

In the light of this great and complex problem, yet one which is perfectly simple when fully understood, to estimate nutritive standards by calories is too absurd for further consideration. The calorie is a register of heat energy only, the nitrogenous endproducts register both normal and abnormal metabolism, perfect endproducts indicating normal conditions, imperfect ones abnormal states. Both can be easily and practically determined (2).

If for any reason the system has become more or less abnormal, theoretically a perfect adjustment in the diet should bring about perfect normal conditions. Oftentimes, however, diet alone will not produce the desired result. Scientifically applied medication will almost invariably cause a return by nature to complete and perfect normal standards, except in a few instances commonly classed as incurable; all of which, in the light of our everadvancing knowledge, will be pushed over into the curable class. Every abnormal condition, therefore, can be made perfect by scientific dieting and medication.

Medicines, no matter how well selected, can never cure any diseased condition. They all act in one way, the same as borrowed capital does in the financial world, by enabling the enfeebled or broken system more fully to utilize the well balanced diet, when Nature unaided by this borrowed capital medicine could never repair the damage no matter how perfectly the well balanced diet was adjusted.

It is in the use of medicines as here outlined that therapeutics becomes a true science and of absolute practical value to suffering humanity. It further proves that nihilism in therapeutics is wrong and a crime against suffering humanity.

With these facts before us it becomes more simple to demonstrate practically what to expect where certain quantities of the proteins are introduced into the human system in conjunction with glucose and fats, that is, assuming that they are perfectly utilized, as they must be to bring about perfect and normal conditions.

We can determine also with a high degree of probability about how much protein is required daily to produce a fully developed human body and how much is required to maintain this perfect state of development.

Some years ago I (2), in an attempt to determine what in all probability might be regarded as the rightful amount of nitrogen to be eliminated daily by the average normal human individual, secured as many recorded urine analyses of apparently normal persons living in all parts of the world as could be collected, eliminated all analyses that indicated diseased conditions or very wide ranges in composition, added them all together and divided by the number taken.

This furnished a good working basis for further studies so far as the elimination of nitrogen from the

system through the urine and other channels was concerned. As only a part of the nitrogen eliminated from the system escapes with the urine, similar estimates had to be made for all secretions and excretions carrying nitrogen out of the system, as the sweat, bile, and other substances. The total amount of nitrogen eliminated daily by all these various channels was found to be in round numbers twenty-four grams when the system is performing a full average day's work.

This total elimination of nitrogen is considerably larger than is generally given when it is assumed that practically all the nitrogen escapes with the urine, while the actual fact is that only seventy-three per cent. of the total nitrogen escaping from the body departs by the urinary channel and only sixty-eight per cent. as urea. To compute results as so many have done, by assuming that all the nitrogen eliminated is to be found in the urine, results in an error of twenty-seven per cent. at the very start. Or to be absolutely accurate twenty-three per cent. If based on urea alone the error is thirty-two per cent. Most observers admit the possibility of five per cent. of nitrogen escaping by some other channel than the urine. But an error of twenty-three per cent. is far too great to start any practical deductions from. With all these facts established it is quite easy to analyze and compute the results to be obtained from all forms of diet composed of the three oxidizable substances, glucose, fats and proteins, no matter what the proportions are. These are facts that every one should know thoroughly before advising patients as to what is best to eat. And it should always be remembered in every instance each individual is largely a law unto himself. In McKendricks (3) *Physiology* satisfactory computations are recorded relative to the amount of heat energy required to sustain the perfect chemical and physiological activities of the human economy. His estimates were originally given in foot pounds, which translated into large calories call for a maximum of two thousand five hundred calories daily as an average. This, too, like the amount of proteins consumed must be augmented two or three times more for the simple heat producers than for the proteins with increased work, which can be done with perfect safety up to a certain point, that is, kept within the safety limit. The proteins likewise must be increased to accomplish more work, not in equal proportion to the augmentation of simple heat producers, for heat energy must be greatly augmented to produce superwork. Hence, the danger of imperfect oxidation. At one time as the result of incorrect observations it was thought increased work was accomplished by the utilization of less protein material.

This error crept in when Professor Dalton made a close observation of the nitrogen eliminated by Weston when the first famous six day walk was made in old Madison Square Garden. Dalton studied the nitrogen elimination in the urea only, overlooking the fact that increased work calls for a tremendous augmentation in heat energy to produce the increased work. That this in turn soon overtaxes the oxygenating capacity of the system, followed by imperfect oxidation reduction of protein bodies, is evidenced by a steady decrease in urea elimination and a proportionate or greater output of uric acid. As each molecule of uric acid carries twice as much nitrogen as does the urea molecule, the nitrogen elimination must be computed both in the urea and uric acid, in fact in all nitrogen carrying bodies eliminated. When this is done it proves conclusively that increased work calls for the utilization of more protein and a consequent increase in the nitrogen elimination. It must be remembered also that protein is a heat producing food as well as a constructive agent. The protein, as Professor Lusk (4) states, "has one property out of all proportion to that possessed by other food stuffs; it very largely increases the production of heat in the body, apparently acting as a chemical stimulus and not alone by virtue of its heat energy content." In brief, as Lusk states it, "protein is necessary to maintain tissue repair, to promote growth, and that when taken above the requirements for these purposes it stimulates the organism to a higher level of heat production."

The dominant idea under all circumstances is to keep the food intake always under the oxygenating capacity of the system. This applies absolutely to the protein elements, for it is out of the incomplete and imperfect oxidation of proteins that we derive all kinds and every form of abnormality and disease, extending from the slightest functional disorder to actual disease and death.

With all these data before us we can in a comparative manner analyze the various diets that have been recommended by various dietitians. In building up diets certain facts must always be remembered. All should contain the three oxidizable elements, glucose, fats and proteins. Whatever the diet, it must always be remembered, no matter what the condition of the system is, that it must be kept well within the oxygenating capacity. Taking 750 grams of oxygen for the normal daily intaking capacity of the average system for oxygen, we can on this basis proceed to analyze diets.

Food taken up to this point is within the safety line, beyond this point we pass into the danger zone. We then pass to a functional or organic disease and on to death as the case may be.

Many conditions vary the intaking capacity of the system for oxygen, all of which must be considered in planning a diet, which must always keep within the oxygenating capacity. Failure to meet these requirements results in no improvement in the patient and he passes from bad to worse and not infrequently to death.

MC CANN'S IDEA OF DIET, OR DIET NO. 1

In this arrangement the amount of protein material needed daily is the lowest of all. Hence we will consider it and its result first.

Protein	80 grams	yielding	326 heat units
Fat	84 grams	yielding	761 heat units
Glucose	271 grams	yielding	1017 heat units
Total	435 grams	yielding	2104 heat units

Grams of oxygen required to burn 80 gms. of protein	110.668
Grams of oxygen required to burn 84 gms. of fat	243.797
Grams of oxygen required to burn 271 gms. of glucose	289.048
Total.....	643.513

The maximum yield of nitrogen from 80 grams of protein is 14.40 grams, sixty-eight per cent. or 6.79 grams of which is excreted as urea or 14.20 grams of urea.

With this type of diet we do not secure the normal maximum heat energy production. We are still 106.487 grams of oxygen within the safety limit, so that more heat producing food could easily be added. Note, however, the very low urea output. With such a low output of urea most examiners of urine would suspect some abnormal or diseased condition. Yet according to the promulgator of this diet it indicates a normal state of the system, and all the protein material needed.

The next lowest diet in protein, glucose, and fat was designated by its promulgator as:

A BARE SUBSISTENCE DIET. DIET NO. 2

Protein	100 grams	yielding	410 heat units
Fats	45 grams	yielding	418 heat units
Glucose	55 grams	yielding	206 heat units
Total	200 grams	or a total	1,034 heat units

Gms. of oxygen required to burn	100 gms. of protein	137.966
Gms. of oxygen required to burn	45 gms. of fats	130.603
Gms. of oxygen required to burn	55 gms. of glucose	58.663
Total.....		327.232

The maximum yield of nitrogen with a diet of this composition will be eighteen grams, sixty-eight per cent. or 12.24 grams of which is excreted as urea or 29.42 grams of urea. The saving of oxygen on a diet of this composition is enormous, less than one half the normal maximum intake being used, or 412.768 grams less than the normal capacity, which would be in comparison like having only half the number of red oxygen carrying corpuscles or one half the hemoglobin.

While this diet contains more protein elements than McCann's, it is a question if there is sufficient heat energy developed to energize the system sufficiently to oxidize perfectly the larger amount of protein material; it certainly is a bare subsistence diet from a calorie viewpoint. Such a diet might be used to reduce fat or to offset the nontoleration carbohydrate theory of diabetes. It is a diet more likely to produce than to cure abnormal conditions, being too much out of proportion.

RANKIN'S DIET OR DIET NO. 3

Protein	100 grams	yielding	410 heat units
Fats	100 grams	yielding	930 heat units
Glucose	240 grams	yielding	901 heat units
Total	440 grams	Total	2,241 heat units

Gms. of oxygen required to burn	100 gms. of protein	137.966
Gms. of oxygen required to burn	100 gms. of fats	290.230
Gms. of oxygen required to burn	240 gms. of glucose	217.056
Total.....		645.252

The maximum yield of nitrogen with a diet of this composition is the same as in a bare subsistence diet, eighteen grams, sixty-eight per cent. or 12.24 grams of which is excreted as urea or 29.42 grams of urea.

In this diet we have a much larger heat energy development and a greater possibility for perfect oxidation of the protein elements. In fact it is a fairly rational diet, keeping within the oxygenating capacity of the system by 4.748 grams under the safety limit. Still, full heat energy has not been developed. The nitrogen output remains low, the heat energy under the 2,500 calorie standard. Hence it is not a perfect balanced diet, so far as the three oxidizable food elements are concerned. The maximum yield of nitrogen is eighteen grams, sixty-eight per cent. or 12.24 grams of which is excreted as urea or 29.42 grams of urea.

The following diets have been given under the following captions:

FOR MODERATE EXERCISE OR DIET NO. 4

Protein	180 grams	yielding	738 heat units
Fat	72 grams	yielding	670 heat units
Glucose	89 grams	yielding	333 heat units
Total	341 grams	yielding	1,741 heat units

Gms. of oxygen required to burn	180 gms. of protein	152.324
Gms. of oxygen required to burn	72 gms. of fat	209.965
Gms. of oxygen required to burn	89 gms. of glucose	93.027
Total.....		455.316

The maximum yield of nitrogen in this diet is thirty-two grams, sixty-eight per cent. or 21.760 grams of which is excreted as urea, or 44.60 grams of urea.

FOR ACTIVE LABOR OR DIET NO. 5

Protein	232 grams	yielding	951 heat units
Fat	77 grams	yielding	713 heat units
Glucose	94 grams	yielding	353 heat units
Total	403 grams	yielding	2,017 heat units

Gms. of oxygen required to burn	232 gms. of protein	220.057
Gms. of oxygen required to burn	77 gms. of fats	223.477
Gms. of oxygen required to burn	94 gms. of glucose	948.274
Total....		1,391.808

The maximum yield of nitrogen from this diet is forty-one grams, sixty-eight per cent. or 27.889 of which is excreted as urea or 50.00 grams of urea.

FOR FORCED WORK OR DIET NO. 6

Protein	242 grams	yielding	992 heat units
Fat	85 grams	yielding	790 heat units
Glucose	104 grams	yielding	390 heat units
Total	431 grams	yielding	2,172 heat units

Gms. of oxygen required to burn	242 gms. of protein	333.863
Gms. of oxygen required to burn	85 gms. of fats	246.695
Gms. of oxygen required to burn	104 gms. of glucose	1109.264
Total....		1,688.822

The maximum yield of nitrogen from this diet is forty-four grams, sixty-eight per cent. or 29.920 grams of which is excreted as urea or 65.90 grams of urea.

In the three diet tables designated as for moderate exercise, active labor and forced work, the protein substances are steadily increased for increasing labor. The total nitrogen eliminated, assuming that the proteins are perfectly reduced, is far in excess of our normal standard of twenty-four grams for each and every twenty-four hours. The amount of fat and glucose is exceptionally low in all three, so much so that it is a question if there is sufficient heat energy produced with which to perform extra work and perfectly reduce the proteins to their normal end-products.

In Diet No. 4 the amount of the three oxidizable food products as here given can be completely reduced, so far as the oxygen supply is concerned. For if they are completely and perfectly reduced there will be left a surplus of 294,684 grams of oxygen within the safety limit, consequently the glucose and fat can easily be increased and thus secure the much needed heat energy to accomplish the extra work and completely reduce the proteins.

In diets five and six, those designated for active and forced work, heat energy is deficient. Here the utilization of oxygen has passed the safety limit by

many grams; hence no more heat energy can be produced and only one thing can happen. The glucose and fats will be reduced to their perfect endproducts, and some of the protein must be imperfectly oxidized or escape under its own form, unreduced, from the body, under this condition abnormal endproducts must be found in some of the secretions or excretions, if not in all, and one of these products is in the form of a glucose molecule (4) Fig. 1. In fact it is by a similar reduction of the proteins that the Eskimo secures normally his supply of animal starch (glycogen) (5) or glucose.

Therefore the diets as here outlined must damage any one who tries to live on them. The only method by which it can be made practically workable is to readjust the amount of glucose, fats and protein until the amount taken comes within the oxygenating capacity of the system or 750 grams of oxygen. This accomplished, it is another form of diet.

MOLESCHOTT DIET OR DIET NO. 7

Protein	120 grams yielding	492 heat units
Fat	90 grams yielding	837 heat units
Glucose	330 grams yielding	1,239 heat units
Total	440 grams yielding	2,568 heat units

The maximum yield of nitrogen is 21.60 grams, sixty-eight per cent. or 12.29 grams of which is excreted as urea or 32.90 grams of urea.

Gms. of oxygen required to burn 120 gms. of protein	155.552
Gms. of oxygen required to burn 90 gms. of fat	261.207
Gms. of oxygen required to burn 330 gms. of glucose	351.978
	768.737

The Moleschott diet, so far as known, is one of the first attempts to present the food elements under this arrangement and show just how much heat energy can be produced by burning glucose, fat and protein within the system. It also shows conclusively how much oxygen must be consumed if these three food elements are completely and perfectly burned. With this adjustment, heat energy and oxygen consumption are both a shade above the normal standard 2.500 heat units and 750 grams oxygen.

Remembering, however, that there is always a slight percentage of the protein lost in the digestive process, both the production of heat units and oxygen consumption will fall just within normal limits. Thus far it is a perfect diet. There are, however, two defects, the nitrogen output is below the normal twenty-four grams standard.

On the whole, however, it comes very close to being a perfect balanced diet. The one other defect is that too much heat energy is developed along the enterohepatic circuit where most of the glucose and proteins are oxidized, and too little along the cardiopulmonary circuit where the fats are oxidized.

None of the other diets here given with one exception comes anywhere near approaching its perfection.

LUSK'S DIET OR DIET NO. 8

Protein	150 grams yielding	615 heat units
Fats	110 grams yielding	1,023 heat units
Glucose	525 grams yielding	1,971 heat units
Total	785 grams yielding	3,609 heat units

The maximum yield of nitrogen is twenty-seven grams, sixty-eight per cent. or 18.36 grams of which is excreted as urea, or 41.11 grams of urea.

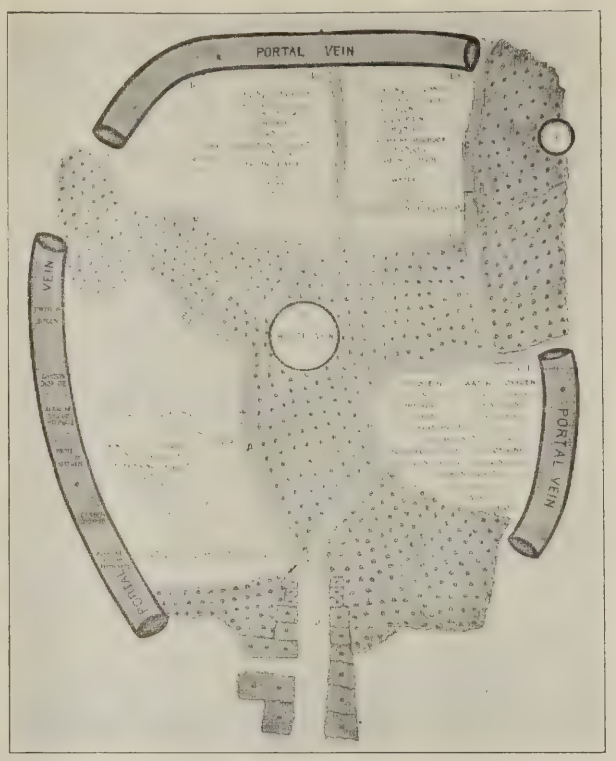

FIG. 1.—Schematic drawing illustrating how the proteid molecule is oxidized or broken up in the hepatic cells, the normal and some of the abnormal products that may be produced in the hepatic cells. (Drawn by John J. McAulliff.)

Gms. of oxygen required to burn 150 gms. of protein	206.890
Gms. of oxygen required to burn 110 gms. of fat	310.253
Gms. of oxygen required to burn 525 gms. of glucose	557.865
Total....	1,084.008

The Lusk diet contains the same amounts of protein and fats as does the Porter diet table. It is, however, much richer in glucose, so much so that if the three food elements were completely oxidized it would yield a tremendous amount of heat energy.

In this respect it is an illustration of what the farmers try to do, it being found that they are supposed to require about 3,500 calories to accomplish the work they strive to perform (4).

To oxidize all of the three classes perfectly, in the amounts as given in this table, calls for a very large expenditure of oxygen or 334 more grams than the maximum oxygenating capacity, or that much beyond the safety limit.

It fully illustrated what the New Englanders tried to do when they worked from sunrise and before, and on the other end of the day to sunset and as long after as daylight lasted.

As in all the other tables where the quantity of food ingested exceeds the safety limit in oxygenating capacity, the suboxidation falls completely upon the protein molecules. As a result various kinds of noxious products are developed, varying in the intensity of their toxicity, some causing rheumatic conditions, some chronic endocardial lesions, some fatty changes in the bloodvessels, followed by hemorrhages in the brain, true apoplexy, and other conditions. In the days when these attempts were made to increase, beyond the safety limit, the working capacity of the human economy, many at the comparative early decades of their lives were crippled if not actually

killed. These instances were frequently observed during my boyhood days when living in the country. It was not until recent years, however, that the explanation of the caustive factors and frequency of these cases became clear to me. Since the inauguration of the shorter hour day and less activity while at work this class of semicripples at comparatively early years has decreased in numbers to a considerable extent and if all could live on a perfectly balanced diet such conditions would be rarely seen.

PORTER'S IDEAL DIET OF DIET NO. 9

Protein	150 grams yielding	615 heat units
Fats	110 grams yielding	1,023 heat units
Glucose	150 grams yielding	563 heat units
Total	410 grams yielding	2,201 heat units

The maximum yield of nitrogen is 27 grams, sixty-eight per cent. or 29.92 grams of which is excreted as urea, or 41.11 grams of urea per diem.

Gms. of oxygen required to burn 150 gms. of protein	206.890
Gms. of oxygen required to burn 110 gms. of fat	319.253
Gms. of oxygen required to burn 150 gms. of glucose	142.991
Total.....	669.134

In this diet I have tried to correct the slight defects as outlined in connection with the one given by Moleshott. It is not an inherently new diet, but one rearranged after Moleshott. It contains more protein and fat and less glucose.

The protein is increased to raise the nitrogen output up to the normal twenty-four grams standard. In this instance if all the protein were absorbed and completely reduced, the nitrogen output would be in excess of the normal standard. When a percentage of ingested protein is deducted, then the nitrogen output falls pretty close to the normal twenty-four grams standard.

It keeps well within the oxygenating capacity of the system, leaving a surplus of 80.866 grams of oxygen. It is slightly under the normal heat energy standard of 2500. This defect can be easily compensated for by using the excess of oxygen to burn a little more glucose or fat, or both. This done the heat energy will be fully up to the normal standard.

The striking difference in my diet as compared with all others, is a larger amount of fat, except in the Lusk diet, and a much smaller quantity of glucose than is found in any other diet except in those that are all out of proportion.

The reason for this arrangement was to secure a more equal generation of heat between the enterohepatic circuit and the cardiopulmonary circuit. While the balance is not absolute, it closely approaches the enterohepatic heat production being 1,178 large calories and the cardiopulmonary 1,023 large calories. A slight shifting in the quantity of glucose or fat or both would make the two absolutely equal.

I have been using this modified Moleshott or the Porter (6) ideal mixed diet for more than twenty years, with highly gratifying results, both to myself and to my patients.

There is just one point in connection with the use of glucose, possibly not known to many, to wit: There are eleven isomeric glucose molecules known to chemists, one of which has been designated by Professor James C. Irvine, of Edinburgh, as a gamma glucose, or one that can be utilized by the system under the most adverse conditions. Professor Irvine has said that it is capable of curing diabetes, and is the only true curative factor for diabetes mellitus.

I have been using for several years past what I believe to be the so designated gamma glucose, and in many instances have found the glucose in the urine to disappear rapidly when the patient was placed on gamma glucose and at the same time upon a perfectly balanced diet, and given liquor calcis et sodii phosphatis compositus, with no other medication. At times, however, as previously stated in this paper, other medication is absolutely essential, as insulin, for instance, and various other pharmaceutical preparations. Insulin is a wonderful remedy for emergency work, but not for continuous and promiscuous administrations; in fact, all medication should be directed exclusively by trained and skilled medical men.

With all these facts closely in mind, it is perfectly simple to arrange a perfect and well balanced diet, that will fit all conditions, both for normal individuals and every conceivable abnormal condition as well.

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640 Madison Avenue.

Pharmacological and Therapeutic Properties of the Sulphocyanates.—John Benjamin Nichols (*American Journal of the Medical Sciences,* November, 1925) says that the therapeutic effect of sodium sulphocyanate in lowering blood pressure is scarcely explainable on the basis of its physiological and pharmacological action in large doses as thus far elucidated. In animal experimentation large doses have been found to exert a directly opposite action. Nor does this therapeutic effect seem explainable on the ground of promoting the elimination of calcareous deposits in the sclerosed arteries, since the removal of such deposits would probably take place much too slowly to account for the prompt reduction of blood pressure that frequently occurs. Besides, a more permanent reduction of blood pressure should be expected from decalcification of the arteries than occurs clinically.

The alkaline sulphocyanates are stable, distinctive, and biologically active substances, entirely different in their pharmacological properties from the deadly prussic acid and cyanide group. In sufficient amounts they exert potent and distinctive pharmacological properties, acting especially as intense spinal irritants, with lethal termination. For therapeutic use sodium sulphocyanate in doses of up to one gram daily (five grains three times a day) has been found markedly effective in reducing arterial hypertension.

Puerperal Sepsis in Wales

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The tables and diagrams exhibited, taken in conjunction with those for previous years, show that Wales has a consistently high maternal mortality rate and that the Welsh figures are much higher than the combined figures for England and Wales.

Further, the fact emerges that while the sepsis death rates are somewhat higher in Wales than in England and Wales, the chief disproportion is from other causes.

I have to thank the Registrar-General for permission to quote the figures in the accompanying table relating to 1923, which have not yet been published.

The three types of population compared are 1, county borough populations, which are truly urban in character; 2, other urban districts, which contain a large number of people living under semirural conditions; and 3, rural districts, the bulk of whose populations are country dwellers.

DISTRIBUTION FOR WALES AND FOR ENGLAND AND WALES OF MORTALITY OF WOMEN IN CHILDBIRTH, PER THOUSAND CHILDREN BORN ALIVE, DISTINGUISHING SEPTIC AND OTHER CAUSES, 1921, 1922, AND 1923

	1921		1922		1923	
	Wales	*England and Wales*	*Wales*	*England and Wales*	*Wales*	*England and Wales*
County boroughs—						
Sepsis 1.35	1.54		3.32	1.62	1.94	1.41
Other causes..2.99	2.40		3.34	2.28	2.67	2.60
All causes....4.34	3.94		6.56	3.90	4.61	4.01
Other urban districts—						
Sepsis 1.72	1.27		1.31	1.27	1.49	1.25
Other causes..3.47	2.76		3.77	2.68	3.92	2.57
All causes....5.19	4.03		5.08	3.95	5.41	3.92
Rural districts—						
Sepsis 1.80	1.25		1.45	1.16	1.51	1.15
Other causes..4.55	2.97		3.83	2.85	4.54	2.72
All causes....6.35	4.22		5.28	4.01	6.05	3.87
All districts—						
Sepsis 1.67	1.38		1.75	1.38	1.59	1.30
Other causes..3.68	2.53		3.68	2.43	3.83	2.51
All causes....5.35	3.91		5.43	3.81	5.42	3.81

It will be seen that in England and Wales as a whole, the death rate from sepsis is lowest in rural districts and becomes higher proportionately as the urbanization of the population increases.

With regard to the death rates from other causes the position is reversed. The more highly urbanized populations show the lowest maternal mortality from other causes. This may be attributable to the better medical and surgical facilities available and to the provision of maternity beds.

In Wales the sepsis death rates show no regular variation with the type of population concerned, but regarding deaths from other causes the table shows how much greater is the risk for the rural mothers than for the mothers in the urbanized communities.

Before proceeding to deal with some of the possible underlying causes of the outstanding position of Wales in the matter now under discussion a few general observations relating to the problem may be opportune.

The first report of the Welsh Consultative Council draws attention to the fact that the principality of Wales is a rugged and mountainous area, consisting for the most part of rural counties sparsely populated, with exceptional difficulties in intercommunication, but also containing some very congested industrial districts where the population has accumulated within recent years with a rapidity that has created unfortunate conditions for the amenities of life and the health of the people.

A special feature of importance is the marked contrast in population distribution existing between, on the one hand, the area covered by the geographical counties of Glamorgan and Monmouth, and, on the other hand, the area covered by the remaining eleven counties. The estimated population of Wales in the recent census (1923) is 2,704,000 in round figures. Of this total 1,765,000 reside in the geographical counties of Glamorgan (1,298,500) and Monmouth (466,500). Thus approximately two thirds of the entire population of Wales lives in two geographical counties, the remaining one third being spread over eleven counties, the average population of which is only 85,000 (round figures).

To return to the particular problem, we have sent in from the Maternity Department of Cardiff Royal Infirmary our quota of records of puerperal sepsis and these have been merged in the consolidated report of the obstetrical and gynecological section.

Apart, however, from the purely clinical and laboratory aspect of the subject, I venture to offer to the congress some observations arising out of certain visits of inquiry which, either personally or together with some colleagues of the Welsh Consultative Council, I was enabled to make to some seven or eight different centres in the principality during 1923-24.

On four of these occasions, one in North Wales and three in South Wales, being accompanied by some colleagues of the council and of the Welsh Board of Health, it was an especial advantage to meet at these centres the medical officers of health (county and district), and representatives of health committees, nursing associations, practising midwives, insurance committees, voluntary organizations, and others interested in general health questions. This conference was held in morning session, and in the afternoon the doctors of the area attended in goodly numbers, when a frank and unfettered discussion ensued. Nothing was more striking than the keen desire on the part of the members of the profession and of the various bodies represented and concerned to bring about a much needed and available betterment in the mortality and morbidity rates associated with childbirth and childbed.

I shall endeavor to indicate what appear to me to be some of the more important facts emerging and impressions gained at these local inquiries.

1. *Locality.*—As between rural, industrial and mixed areas it would seem that the incidence of maternal mortality from puerperal sepsis is not demonstrably influenced to an appreciable degree by questions of geographical location or by questions affecting population distribution.

2. *Midwives.*—Although the opinion was expressed by some medical practitioners that the old bona fide midwife was more likely to send for medi-

cal help on the occurrence of difficulties, the opinion of the doctors generally as well as of the various representatives was strongly in favor of a larger supply and a more satisfactory distribution of fully qualified midwives.

It was agreed that such a distribution might be effected on lines which allowed of a reasonable degree of freedom of choice by the patients and satisfactory sharing of the work by the midwives. A systematic distribution should also provide, by substitution or otherwise, for the contingency of midwives becoming "contact" with septic or other infective conditions.

3. It was generally agreed that subject to satisfactory distribution the midwives should be restricted to the practice of midwifery, but that where this was not practicable, for instance, in some rural areas, it was preferable to combine the duties of the midwife with those of the health visitor rather than with those of the district nurse.

4. Some divergence of opinion was evident as to the feasibility of establishing the status of what are called home helps in any health scheme. The really efficient home help must surely represent a consolidation of good qualities but rarely seen.

5. The value of maternity homes, maternity wards, and antenatal clinics was fully recognized at the conferences in all the centres visited. In certain areas local opinion had to be educated as to the essential value of these establishments in order to lead to their being freely used.

Prejudice in regard to the work of the trained midwives and health visitors had at first existed in considerable degree but had in large measure disappeared, and the evidence went to show that where lying in beds and antenatal clinics had been made available a similar experience had accrued.

To have the antenatal clinic within the curtilage of the maternity hospital had been found to be a convenient and educative arrangement.

In the larger towns it had been found of great advantage to link up the maternity ward or wards with the general hospital so that the service of the medical, surgical and special departments would, if required, be available for the expectant or parturient mother.

The importance of the medical officers of the antenatal clinics keeping in touch with the general practitioners and advising them of any abnormality discovered, was strongly emphasized, and in midwives' as well as doctors' cases the value of periodical examination of the urine during pregnancy was readily conceded.

6. In the rural areas especially care of the teeth during pregnancy was little thought of, and the adage "for every child a tooth" had been expanded into the prevalent belief that in the expectant mother dental caries was inevitable and its treatment undesirable.

At one of the inquiries a medical officer of health stated that the condition of the mouths of the mothers who attended the infant welfare centres was appalling, and at another conference a medical practitioner said that the condition of the teeth of the people generally was very bad, "that no woman ever thought of going to a dentist unless she had toothache, and that there was a fallacious general belief that women ought never to have their teeth attended to by a dentist during pregnancy."

In the rural areas there is, of course, difficulty in obtaining the services of qualified dentists.

7. *Nourishment of expectant mothers.*—In the more rural areas the inquiries went to show that the general standard of living of the mothers was poor, and their dietaries inadequate and poorly balanced.

In the smaller homes it was stated that the families seldom saw a fresh joint of meat; that milk was often unobtainable; that the people had not acquired a taste for fresh vegetables which could so easily be grown; and that they seldom had any form of fresh food. The family fare consisted too largely of tea and bread and butter. "The teapot never gets cold till late at night," and the tendency, even where produce was grown, was to sell the best of everything and keep the poorest for consumption at home. Statements were made to the effect that, even in these circumstances, the mothers by their own act "came last" and were often markedly anemic and debilitated, with the result that at the time of confinement their powers of resistance whether in regard to infection or other parturient risks were at the lowest ebb.

In the industrial areas, similarly, the unselfishness of the mother was an important factor, especially under the present economic conditions, both as regards improper and insufficient dietary and also as regards the strain of the almost continuous household duties in the colliery districts, for instance, where the husband, sons and lodgers may be engaged in different work shifts at the pits.

8. *Housing conditions and environment.*—Much evidence was forthcoming to show the need for the rousing of a more enlightened public opinion as to the capital importance of sanitation and other hygienic conditions.

Apart from the admitted shortage of housing accommodation, the dilapidation of existing houses and the existence of overcrowding which are unquestionably contributory factors in the problem, there remains the fact that even in present conditions there is scope for much improvement in the habits and customs prevailing in many parts of the country—improvement that can only be achieved by a vigorous educational effort by health authorities and all who are interested in bringing about a fuller appreciation of the laws of health—both by those who build the houses and by those who live in them.

In the country, the houses are often very small and badly ventilated. Many of the cottages consist of two rooms with a loft, and the flooring may be of mud or sometimes slate. As many as twenty per cent. of the houses have no sanitary arrangements whatsoever. There is too often a lack of personal and household cleanliness and a general disinclination to change personal or bed clothing. Occasionally women may be confined on the floor, lying on clothing already soiled, to save the bed.

In the industrial areas there is a great deal of overcrowding. In the Rhondda district over ten thousand families live in houses occupied by more than one family, and in this and other areas instances were quoted where two or more families lived in the same house, and that of small dimensions, with the result that confinements had often to

take place under the most undesirable and unseemly conditions.

The plea for the establishment of maternity homes and hospitals in such areas is overwhelming and is but slowly being responded to.

9. *Nondisclosure of puerperal sepsis.*—There is no doubt that, either avoidably or unavoidably, the requirements with regard to notification are not properly observed. For the five years 1918-1922 inclusive, while there were 503 deaths from puerperal sepsis in Wales and Monmouthshire, the number of notifications was only 579, and in some areas the number of deaths exceeded the notifications.

This important matter was fully discussed at all the meetings with the doctors, and there was general agreement that notwithstanding the disabilities in the practices of doctors and midwives which might accrue from notification of sepsis, the urgency of taking all steps to prevent the spread of the infection, as well as to secure such help in the management of the case as the local authority could furnish, should prevent in every case the avoidance of this responsible duty.

At the same time many of the practitioners drew attention to some real difficulties. And, firstly, as to the question of diagnosis, it was fairly stated that apart from pyrexial conditions which are quite independent of the puerperium, as such, and excluding also the socalled reactionary rises in the first twenty-four hours, temporary elevations of temperature from 100° to 102° F. may occur during the first week from errors of diet, constipation, emotion or other nervous disturbance, or from unimportant mammary conditions.

More guidance was asked for in regard to differential diagnosis. As desiderata it would appear to be considered that either a readily applied clinical test should be evolved or a more comprehensive formula employed as the basis for notification. The difficulties might be that with the former not a few cases of sepsis would escape detection, and that the latter would include more than all the cases of infection. At one of the meetings a recommendation was put forward indicating the desirability of district medical officers arranging with registrars of births and deaths of the subdistricts for the supply of earlier information of deaths caused by puerperal fever, as this would enable the medical officers of health concerned to make prompt enquiries as to actual and contributory causes.

Another handicap to notification was the objection thereto sometimes raised by the lying in woman herself or by her relatives and friends. Notification which results in nothing beyond visitation by various officials cannot be other than unpopular, but if and when it is followed by helpful service and, where necessary, institutional treatment, the prospects of its acceptance and efficiency are more assured.

Complacency is another contributory cause to inefficiency. This was especially illustrated by the discovery in one of the rural counties of the tradition that a mother recently confined *must* have a temperature, the condition being dignified by the title *Bradgyfarfod,* which, freely translated, may be taken to mean "a combative meeting," the factors in the combat being regarded as the lochia and the mammary secretion.

It is not contended that such a belief is generally current, but it would certainly be true to say that the existence and even the persistence of a temperature in childbed is far too often regarded by the patient and her friends with the minimum of concern.

10. *Attendance by doctors and midwives.*—There is considerable diversity in various parts of Wales in regard to the number of confinements attended by midwives only, and the number attended by doctors (with or without midwives). Thus, in Merionethshire, a rural county, the proportion of cases attended by doctors is very high, the figures being eighteen per cent. attended by midwives only, and eighty-two per cent. by doctors (with or without midwives). At the other extreme, in the Rhondda District (Glamorgan), eighty-four per cent. were attended by midwives only and sixteen per cent. by doctors (with or without midwives). Speaking generally these variable proportions, as between rural and industrial areas, prevail throughout Wales and Monmouthshire.

It would be fallacious to infer from these proportions that the rates of morbidity and mortality follow in either one direction or the other. Fears were expressed in some of the industrial areas that the high proportion of cases attended by midwives was disadvantageous to the patients, but on the whole it was found that in these areas the midwives are well trained and sufficiently impressed with the importance of sending for medical aid as occasion may require.

In the rural areas the dearth of trained midwives accounts for the large proportion of cases in which the doctor is engaged, and it is asserted, too, that the unskilled services of the handy woman contributed largely to the high sepsis rate.

It was agreed that an increased supply of qualified midwives is especially urgent for the rural areas.

11. *Ages of marriage.*—For the Counties of Wales and Monmouthshire a table giving the percentage of the total marriages of women contracted, 1, before the age of twenty-one, and 2, after the age of thirty-five, shows that in a given year (1921) there was a higher percentage of the early marriages in Wales (18.2) than in England and Wales (14.9), and a lower percentage in the later marriages (Wales 9.3, England and Wales 10.7).

It is of some significance that some of the counties showing the highest percentages of late marriages are also among those with the highest maternal mortality rates.

12. *Abortion.*—The impression was gained that abortion and attempted abortion, both by means of drugs and various instruments, is prevalent to a considerable and an increasing degree in the industrial parts of Wales. In one such area with Pontypridd as its population centre the figures show that 11.5 per cent. of the deaths arising out of pregnancy and childbirth were attributed to this cause.

13. *Use of forceps.*—The question of the use and abuse of the forceps was fully and frankly discussed at the doctors' meetings. There was common agreement in the view that while in a proportion of cases the use of the forceps was advisable or imperative, in no case could the mere saving of time of those in attendance be regarded as a justifiable indication, having regard to the admitted increase in the risks

of infection and injury which their employment entails.

As to the use of forceps generally, not a few of the doctors stated that they applied them much less often than was their habit some years ago, and that this was, in part at least, attributable to the good results of antenatal clinics as well as to pronouncements of some latterday obstetricians!

14. *Rubber gloves and sterilized obstetrical outfits.*—The doctors and the representatives of the midwives concurred in the view that the intelligent use of rubber gloves and the provision of sterilized outfits would do much to combat those domestic conditions which so largely increase the risks of septic infection.

15. *Notification of pregnancy.*—Compulsory notification, however valuable it might be as leading to adequate supervision during pregnancy, was regarded by all parties represented at the various conferences as an impracticable proposition.

It was thought, however, that the principle of voluntary notification would ultimately prevail when, by wise propaganda and the continued advice of doctors, midwives, and health visitors, the benefits deriving from voluntary notification were more generally appreciated.

SUMMARY AND CONCLUSION

The facts and responsible opinions emerging from these representative conferences justify the conclusion that the efforts which the community must make toward the solving of this urgent problem must include the following:

1. A more complete and better organized provision of thoroughly well trained and suitably educated midwives and health visitors.

2. A considerable extension of well supervised schemes for the antenatal supervision of mothers, both domiciliary and at clinics.

3. An extended and improved supply of milk and other necessary forms of nourishment for expectant and nursing mothers.

4. A substantial addition to the existing provision of maternity homes and of maternity wards in or in connection with the general hospitals.

5. Finally, I am convinced that by better organized clinical and laboratory research such further light can be thrown upon the predisposing and the actual causes of puerperal sepsis as will lead to a larger measure of prevention and to more effective treatment, and there can be little doubt that a real contribution to that end will be reckoned among the many good results of this congress.

Observations on Puerperal Sepsis*

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Infection developing during the puerperal period and originating in some focus in the birth canal has ever been a source of disquietude to obstetricians and a potent factor in the mortality and morbidity which all too often follow childbirth.

For a clear understanding of the subject, it would seem that the term puerperal sepsis, while undoubtedly proper in a generic sense, requires further subdivision and classification for more accurate diagnostic localization, as well as for treatment.

The genital tract from the tubes and ovary to the vulva may be the primary seat of infection during the puerperium although its component tissues vary greatly in their susceptibility to invasion by pyogenic bacteria. The vulva and vagina are strongly resistant, although Bartholin's glands may become converted into abscess sacs, while the bacillus of diphtheria and the pneumococcus sometimes are the causes of grave vaginitis. The cervical mucosa is a fairly common seat of infection, but the usual site of the original inoculation is the degenerating decidua, especially at the placental site.

The etiology of puerperal sepsis is very simply explained. An overwhelming majority of cases are due to the spreading of a local wound infection, pyogenic bacteria being brought into contact with the laceration attendant upon delivery, even though these lacerations be minute and confined to the decidual surface of the uterus.

In a comparatively small number of instances, the infection is autogenous, due either to the recrudescence of a latent adnexal inflammation, or to the development of bacteria in the birth canal from a remote focus of infection, appendix, gallbladder, kidney, pelvis, tonsil, or even abscessed teeth.

A survey of carefully kept records over a number of years discloses some interesting facts. Lea has said that "the general introduction of anesthesia into obstetrical practice is responsible for a marked increase in puerperal sepsis. Prior to this event, operations were undertaken rarely and with reluctance, but with the general use of ether and chloroform they were performed with increasing frequency and a distinct increase in mortality can be traced to this fact. Thus, while in 1847 to 1856 the mortality did not exceed 1.8 per thousand in England and Wales, in spite of the absence of antiseptics in the years 1875 to 1884 this has increased to 2.4 per thousand (almost double) and has as yet shown few signs of diminution.

It must be recognized, however, that while sepsis increased in proportion to operative deliveries, so did the mortality from accidents of childbirth decrease, and by comparison with the same periods, an accidental death rate of 3.56 per thousand in the decade between 1847-56 was reduced to 2.28 in the period from 1875-84. Thus, although the risk of sepsis was greater the maternal death rate from all causes was lessened from 5.27 to 4.57 per thousand in the same period.

It follows then, that with greater knowledge and

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power among obstetricians for successful operative deliveries there has resulted an increase in the puerperal sepsis rate, but a net improvement in obstetrical results despite this increase.

That the reduction in maternal mortality is so slight, in spite of the enormous development in operative technic and in the individual employment of aseptic methods, is a severe indictment of the profession, since puerperal sepsis is a preventable disease and the great majority of its victims die as the direct result of improper attention to the details of asepsis on the part of the medical attendant, the nurse, or both.

After delivery there are always present many smaller or larger lacerated wounds in the birth canal, particularly on the uterine surface where the placenta has been attached or when small portions of endometrium have been scraped away during the passage of the fetus. These local wounds are the seat of the primary infection in most cases.

TYPES OF PUERPERAL SEPSIS

If we admit then that puerperal sepsis begins as a localized endometritis it may develop in various ways and run widely different courses.

1. The infection may remain localized in the endometrium, with necrosis and sloughing of the membrane and with no general symptoms save a mild elevation of temperature.

2. The infection may remain localized, as indicated above, but from the multiplication of saprophytic or putrefactive bacteria there may be a systemic absorption of bacterial endotoxin with markedly septic temperature curves, and some elevation of the pulse rate, the condition being known as puerperal sapremia.

3. The infection may remain localized but the invading organisms being of a high degree of virulence, may penetrate the reaction zone in the uterine wall, enter the blood stream and eventuate in septicemia—the socalled blood stream infection of deadly activity, possibly terminating in pyemia with multiple abscess.

4. The infection may spread by continuity, and involve the veins of the broad ligaments causing septic thrombophlebitis of these vessels.

5. Small necrotic masses, bacteria laden, may enter the tubes and cause salpingitis.

6. General peritonitis may occur either as a result of leakage from the fimbriated extremity of an infected tube or by transmission via the blood or lymph streams.

The mechanism of these several terminations is best explained by reference to the balance between individual resistance to bacterial invasion, and to the specific activity of the bacteria involved. Thus, should the infection be due to the ingress of purely saprophytic germs a sapremia of low degree will result in a woman of good resistance. However, if the resistance be poor, even saprophytic bacteria may develop an increased toxicity and give rise to the more severe forms of inflammation.

When organisms of high virulence are the source of the infection, widespread lesions follow rapidly, the Streptococcus hemolyticus pyogenes being possibly the worst offender.

The diagnosis of these several types of puerperal sepsis is most important since any hope of success in management lies in a correct interpretation of the nature of the disease processes to be combatted.

SYMPTOMS

The early symptoms are almost universally restricted to a moderate rise of temperature accompanied by a slight chill, on about the third day after delivery. At this time the infection is localized in the endometrium, the first febrile reaction being usually due to a toxic absorption—the sapremia of the older writers. There may be present some abnormal odor to the lochia. Within forty-eight hours the progress of the condition will become manifest. If the invading organisms are of low vitality and the natural resistance of the patient high, the disease will remain local, the wall of exudate, phagocytes and small round cells will not be penetrated and a rapid return to normal takes place. The temperature falls, the rigors cease, and the lochia loses its foul or sweetish odor. This happy termination, however, is not the rule. More frequently the inflammation becomes widespread taking one or more of the forms described. The onset of pain usually predicates salpingitis, pelvic cellulitis, thrombophlebitis of the broad ligament or a beginning general peritonitis.

If pain be generalized in the pelvis, and vaginal examination discloses an induration about the lower uterine segment with fixation of the cervix and extreme tenderness on palpation of that organ, pelvic cellulitis is to be strongly suspected. When pain of marked severity develops in one or both iliac fossa, with rigidity of the recti muscles, occasional vomiting, a sharp rise in the leucocyte count and the presence, on vaginal examination, of more or less indefinite masses in the tubal region, acute salpingitis with some degree of pelvic peritonitis is the probable lesion.

When pelvic pain is steady and severe and extends down the thigh, the temperature running a septic course but not excessively high, with very marked tenderness in the vaginal vaults but no definite masses, thrombophlebitis of the veins of the broad ligament is the probable causal factor.

General peritonitis discloses its presence by its usual dread manifestations; vomiting becoming dark brown, a dry, brown tongue, meteorism, cessation of peristalsis, generalized abdominal pain and a rapid running pulse.

Lastly, septicemia, the so common termination when the bacteria are of high virulence, is possible of diagnosis even before the detection of a positive blood culture by the entire absence of subjective symptoms in a woman who is obviously desperately ill.

Questioned as to her symptoms such a patient will express a sense of well being, will inquire as to how much longer she must remain in bed and on examination will present very few signs of illness. The abdomen is flat and soft and not tender, the lochia is normal and only the very great temperature excursion, 105° to 97° in twelve hours, the rapid pulse and the progressive anemia and hemolysis give evidence of the gravity of the situation.

Attention is called to the fact that while didactically expressed, the varieties of puerperal sepsis form a series of sharply differentiated clinical pictures, this is by no means the fact in actual practice. One set of lesions is so frequently superimposed on another that diagnostic features become obscure and great difficulty arises in reaching a conclusion.

There is one practical point in this connection which I beg to emphasize, and that is, the necessity for frequent physical examination of these patients.

All too often a case is diagnosed as "puerperal sepsis" and treated along general lines, the forming pelvic abscess being entirely overlooked or the blood stream infection allowed to progress without knowledge of its existence. Like all diseases involving purulent processes, the characteristic features change with sometimes startling rapidity, and constant and close supervision is obligatory in order that the medical attendant may snatch the moment of election for the evacuation of some localizing collection of pus.

In order not to extend this paper unduly, infections of the vulva or vagina have not been included although they form an integral portion of any complete consideration of infections developing after labor.

Sepsis of autogenous origin must, however, be given some place in such discussions. A preexisting, salpingitis will occasionally be lighted into activity by the traumatism and congestion incident to labor with the development of signs of peritonitis within a few hours after delivery. The diagnosis will usually be made clear by the rapidity of onset; much too soon for infection spreading from a local source in the endometrium.

Occasionally, a remote colony of bacteria will be excited to renewed activity during labor and being transmitted to the uterine area of least resistance by way of the blood stream will then produce the usual lesions of acute infection. The appendix, gallbladder, kidney, pelvis and even the teeth and tonsils may furnish such autogenous foci.

The diagnosis of this mode of origin is difficult and rarely certain, but a history of the existence of an old site of inflammation together with the early onset of symptoms may give rise to the suspicion that such is the underlying pathogenesis.

PROGNOSIS

The mortality of puerperal sepsis may be said to increase in direct ratio to the virulence of the bacteria and their ability to penetrate the granulation zone set up in the defense of the tissues and inversely with the resistance of the patient and the power of her phagocytes to destroy the invading organisms as they enter the blood stream.

The general mortality is about thirty per cent., but this figure should be separated since the prognosis is so different in different types of infection. Thus, septicemia especially when the causal organisms is the Streptococcus hemolyticus pyogenes will show a death rate of from sixty to eighty per cent., while sapremia will be fatal in but one or two per cent.

Localized infection, cellulitis, salpingitis, carry a low mortality, while that attendant upon general peritonitis is frightful, at least eighty-five to ninety per cent. Whatever the type of infection, the prognosis should always be grave and the case regarded as one of the utmost seriousness.

MANAGEMENT

The treatment of puerperal sepsis divides itself easily into prophylaxis and cure. The former offers a beguiling subject for debate since it leads to a consideration of broad obstetrical policy and indeed to a review of the whole matter of methods of delivery.

It was stated at the beginning of this article that infection of the parturient woman increased in almost direct ratio to the general use of operative and manual methods of delivery, which were facilitated by the introduction of anesthesia. From this fact one would deduce that invasion of the birth canal, either manually or instrumentally, should be reduced to the minimum limit to prevent contamination. When one considers the matter, however, it becomes apparent that such deduction would be manifestly false, since we have many examples of the boldest intrauterine manipulations without untoward results. In this city there lives an obstetrician who has engaged in more manual explorations of the parturient uterus than any other man of any time, and while I do not have Potter's statistics at hand, I venture the assertion that the occurrence of puerperal sepsis in his practice is so small as to be negligible. In Chicago, the general use of prophylactic forceps plus a major vaginal operation, by De Lee, has certainly shown a low incidence of infection. With these two examples, it is clear that the uterus may be invaded with safety and that the cause of sepsis does not lie in this procedure *per se*.

The whole question resolves itself into one of surgical asepsis. Given an obstetrician with the aseptic conscience, properly trained in surgical technic, and he may enter the uterine cavity with perfect impunity, when and where he will.

The problem is the old one of better obstetrical training and the making of so profound an impression upon the mind of the student as to the absolute and unceasing necessity for the maintenance of aseptic technic in the practice of obstetrics, that he cannot lapse in after years, even though he would.

MANAGEMENT

The management of puerperal sepsis, when it has been established, may be considered under the heads of local treatment, general systemic measures, and the methods of sterilization of the blood stream, to which may be added operative procedures. Inasmuch as most cases begin as an endometritis of some kind, local treatment was long held in high esteem and many instruments have been designed to facilitate the removal of necrotic material from the uterine cavity. Happily this erroneous treatment has generally been abandoned since it has been shown that attempts to remove the infected endometrium are usually fraught with disaster.

The only barrier between the bacteria laden decidua and the blood stream lies in the zone of granulation tissue which rapidly forms and which may maintain localization of the disease process.

Instrumental emptying of the uterus, no matter how delicately performed or how blunt an instrument is used, is certain to break down little areas of this granulated tissue, thus opening the great uterine blood spaces and the retroplacental thrombi to bacterial attack.

Furthermore, since the infection has become general, at least in a measure, within a few hours after the implantation of the causative organisms, it is of no therapeutic value to remove the original site. De Lee has well said that it is as logical to curette the fauces in diphtheria as the uterine cavity in sepsis.

It is my belief that the curette, the placental for-

ceps, and even the gloved finger have no place in the treatment of septic endometritis in the puerperium. How then shall we reduce the infectivity of the germ laden tissue and what measures may we take to hasten its expulsion?

Both of these indications are best met by the maintenance of uterine contraction and the establishment of free drainage. The former desideratum may be obtained by the frequent exhibition of pituitrin and the various ergot preparations. At the Jefferson Hospital we are in the habit of giving five drops of pituitrin at intervals of three hours and a combination of fluid extract of ergot, fifteen drops, with strychnine sulphate one thirtieth grain, three times a day. An icebag over the lower abdomen relieves congestion and facilitates contraction.

Drainage is best established by postural methods. Raising the head of the bed about sixteen inches and encouraging the patient to change her position frequently, lying now on one side and now on the other and occasionally turning on her abdomen for a short time, will best serve this purpose. Some obstetricians prefer the Fowler bed, but in my experience the discomfort suffered by the patient and her comparative bodily immobility far outweigh any advantage gained.

Septic material accumulating in the vagina must be removed by gentle irrigation at frequent intervals—at least twice, usually four times daily.

In certain cases where the infection remains apparently localized in the uterine cavity, but shows no tendency to resolution, attempted sterilization by Dakin's fluid, is occasionally attended by surprisingly good results. This method was strongly advocated some years ago by Sherman, of Pittsburgh, who introduced a small rubber tube perforated with minute openings (the regular Carrel-Dakin tube) into the uterine cavity, placed a light dam of gauze about the cervix and then instilled Dakin's solution by the continuous drip method. The gauze is to be changed daily, and should never be placed too firmly to allow free return of the fluid by seepage through it, without distention of the uterus. This plan of treatment is worthy of more general use than it has enjoyed.

No further local measures are advised. The general treatment consists wholly of procedures tending to increase resistance, combat dehydration and prevent anemia. Frequent transfusions, using small amounts of blood, are by all odds the most important feature of the treatment. Two hundred to three hundred c. c. of properly typed blood transfused by the Unger direct method and repeated at three to four day intervals have shown excellent results. By this means the rapidly progressive anemia is withstood and the general strength of the patient maintained. Abundant food, such as milk, broth, meat juice, and other nourishing liquids, is a necessity and moderate doses of alcohol in the form of milk punches are most valuable.

Dehydration is met by the use of proctoclysis, sodium bicarbonate solution in five per cent. strength being the fluid employed. Restlessness should be controlled by the administration of morphine and chloral and if at all possible the patient should spend her days in the sunshine and the open air if this can be arranged.

Sterilization of the blood stream in the presence of bacteriemia has been the goal of surgeons for years, many antiseptics having been employed with but indifferent success. The work of Piper of Philadelphia, using mercurochrome, has revived the hopes of those who have followed his results and seems to offer more hope of ultimate success than any plan yet devised.

Piper's technic is fully described in his original communication on this subject (1) and is therefore briefly epitomized here.

Immediately upon the discovery of a positive blood culture, the patient is given an initial injection of two thirds maximum dose of a one per cent. mercurochome solution in sterile water, the dose, based upon Piper's research, being thirty c. c. for the first one hundred pounds of body weight and five c. c. for each additional thirty pounds. Beyond thirty c. c. the dose is increased very gradually, especially if there is any question as to renal efficiency. The solution is injected intravenously with a salvarsan syringe and as slowly as may be. Within from thirty minutes to six hours there will occur violent diarrhea, red stained urine, probably very much reduced in amount, some vomiting and nausea.

There is usually a distinct chill lasting as long as a half hour and a rise of temperature to 105° or even higher. These evidences of reaction usually subside within forty-eight hours, after which another injection of thirty to thirty-five c. c. is made. Shock during the reaction is met by the administration of adrenalin, strychnine, or other cardiac stimulants, diarrhea is combatted by the administration of opium, belladonna and bismuth, and the chill is treated by local external heat.

Since blood stream infections always predicate a desperate state of affairs, the clinical results of this treatment, while still far from satisfactory, are by contrast with any other method so excellent that some hope is offered for at least partial success in the management of this, the most distressing and fatal of all obstetric complications.

Surgical intervention is indicated, to my mind, only when definite evidence of localization of pus is present. The pelvic abscess is to be drained, the purulent tube and the cornual abscess in the uterine wall excised, but beyond this we have not seen any gain by surgical methods of contrast.

Considerable controversy arose some time ago regarding the excision of the thrombotic veins of the broad ligament, but the operation has fallen into disuse, its results being in the main unsatisfactory.

Early hysterectomy has had its advocates and seems a logical plan of treatment, but since septic patients are poor surgical risks, and as the infection has probably already progressed beyond the limits of the uterine wall, the procedure has not met with general adoption.

The management of general peritonitis following puerperal infection is that of peritonitis in general. Whether one is an apostle of conservatism, or of radical operative intervention, the end results are approximately the same, a frightful mortality, with only an occasional recovery to brighten the darkness of the picture.

Much more time might be spent in a consideration of the protean phases of this most important and interesting aspect of our work, but in a brief article

of this character one may only skim the surface, giving a very brief outline of a few of its more important and outstanding phases.

CONCLUSIONS

In conclusion, I beg to submit four theses:

1. An accurate diagnosis of the particular lesions developing in a case of puerperal sepsis is necessary to its intelligent management.

2. Intrauterine manipulation is not *per se* a cause of infection, but failure to apply the principles of surgical asepsis to obstetrical medicine is the usual cause of the disease.

3. Local intrauterine treatment is productive of great harm and little good.

4. Chemical sterilization of the blood stream offers the only hope of successfully meeting the most fatal of septic terminations.

REFERENCE

1. Piper, E. P.: *Am. Jl. Obstet. & Gyn.*, November 7, 1922.

1814 Spruce Street.

The Education of the Asthmatic*

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The asthmatic must be taught how to protect himself as much as possible from the agents which precipitate an attack, such as horses, cats, frosty air, hematolytic and night atmospheric gases, and other causes. Some cases of complicated asthma and the uncomplicated cases which are extremely sensitized to periods of blood disintegrating, meteorotelluric phenomena, as the fall and spring equinoctial seasons, should, during these seasons, either migrate or stay in the house, and sleep in a bedroom as high in the air as possible, protected with a gas filtering ventilator and kept at a blood stabilizing temperature, light and humidity. At this time they should also eat as little food as possible (1).

The asthmatic must know the nature of his trouble. He must know why he should take treatment. He must know that in some uncomplicated cases of asthma the patients, without treatment, would have become suffering invalids, while through a knowledge of the nature of their trouble and the object of their treatment they have had sufficient faith and confidence in the treatment to continue it, in spite of many discouraging attacks, thus enabling them to lead useful and selfsustaining lives.

The treatment of asthma is largely educational. The asthmatic must be taught that there is no specific cause or treatment for asthma, but that treatment must be prescribed and varied as indicated by physical examinations and a study of the blood, urine, sputum and stools.

The asthmatic must be taught to diminish or stop his prescribed blood deficient biochemical medicines when his unstable blood is in food, metabolic, meteorotelluric, physicochemical equilibrium, in order to encourage his blood to draw its deficient chemicals from the prescribed, indicated diet and the prescribed hygienic or sunshine treatment.

The asthmatic should know that his unstable blood is hypersusceptible and sensitized to numerous disintegrating agents. The normal blood and tissues contain hydrogen, oxygen, sulphur, chlorine, iodine, fluorine, nitrogen, phosphorus, carbon, silicon, potassium, sodium, calcium, magnesium, arsenic and iron. The blood of the asthmatic is seasonably and periodically deficient in many of these elements, which should be prescribed in the form of medicines and a proper diet. When a deficient blood element has been determined, it should be administered separately and not in combination with other deficient elements so that it may be diminished or stopped as the blood draws it from the prescribed diet or from sunshine treatment.

The asthmatic should know that the unstable blood of most asthmatics is sensitized for life to certain meteorotelluric phenomena and certain gases. He should also understand that the unstable blood of most asthmatics imperfectly nourishes their capillaries, which gives them for life an accumulative diathesis which, if not counteracted by indicated starve periods, will automatically disintegrate the unstable blood of these patients, resulting in attacks of asthma.

Having furnished the asthmatic with a knowledge of his handicaps, we must then endeavor to educate him how to best live with them, just as we supply an artificial limb to a one legged man and teach him how to use it. The asthmatic should know that recent discoveries concerning asthma have, when intelligently applied in the treatment of asthma, robbed it of its indescribable suffering and disability.

The application of these principles has been so successful in preventing disability and prolonging life in uncomplicated cases of asthma that a life or sick benefit insurance company need not hesitate in accepting the uncomplicated case with the patient's signature to a proviso agreeing to present himself to his family physician once a month for examination and promising to cooperate as to indicated dietetic changes, seasonal prophylactic measures, medicinal aids, change of environment, occupation, and other factors.

In many cases of complicated asthma the patients may also be educated to live without incapacitating attacks and to work at their chosen occupation, as shown by the following case:

Case I.—No. 601. Mr. J. G. P., April 27, 1914, Buffalo, N. Y., aged fifty-five, referred to me by Dr. Irving W. Potter. When I was called, patient was ill with asthma and bronchopneumonia. In a short time patient became delirious and I called Dr. Potter back for a consultation, as I feared the patient would die. However, he gradually recovered and on May 27th had no asthma. On June 11th he came to

*Read before the American Association for the Study of Allergy at Atlantic City, May 26, 1925.

my office. Weight 123 pounds. Patient had had asthma in a severe form for the last ten years, sitting up nights with attacks, and a rectal fistula for eighteen years, which was still discharging pus. He is still under my care, and during these eleven years he has suffered with but little asthma and has worked every day except when occasionally off in the spring of the year with short grippelike attacks. He has worked as foreman of a planing mill at this time. His fistula would heal and then break open again; at present it is healed and he is doing fine. He feels that his asthmatic troubles are over.

The asthmatic that is educated to assist in avoiding asthma, protects himself when possible from blood disintegrating agents as night atmospheric gases and other hematolytic gases as swamp, subtropical, tropical, barn gases, sewer gases, and others, and cooperates in fortifying himself against blood disintegrations by utilizing blood stabilizing agents as outdoor sunshine and sun electromagnetism, altitude, oxygen, ozone, open air, a well balanced indicated diet, and indicated blood rechemistration.

The asthmatic, in order to cooperate intelligently in the prevention of asthma, must know something about its pathology. He must know that after his unstable blood disintegrates with its resultant attack of asthma, it dumps its disintegrated material along the line of least resistance which in the asthmatic is the mucous membranes of the respiratory tract.

The blood dumping process first starts in the head, giving the characteristic watery eye and sneeze or coryza, second in the laryngeal pouches, pushing the false vocal cords into the lumen of the larynx and giving them a valvular action, which obstructs the expired air current with the characteristic wheezing dyspnea or attack of asthma. This laryngeal dyspnea soon loads the blood up with carbon dioxide and dilates the capillaries of the mucous membranes of the trachea, bronchi, bronchioles and air cells, rendering the walls of the air cells and bronchioles congested, distended, erectile and noncollapsible which rapidly results in a respiratory block or severe attack of asthma.

If the blood disintegrating agent was a hypodermic injection of a raw proteid, it constitutes an anaphylactic shock and frequently death from asphyxia. There is no spasmodic contraction of the air tubes in asthma or in anaphylaxis.

The dyspnea of asthma or anaphylaxis is often relieved by any agent that contracts the capillaries as adrenalin, pituitrin, strychnine, morphine, atropine, quinine, ergot, and other drugs. A spinal cupping followed by a capsicum rub helps to relieve asthma by increasing the adrenalin output and stimulating the nerves.

Adrenalin is only a temporary relief for asthma. Many asthmatics come to me with their legs and arms so black and abscessed that there is no more space for another hypodermic needle and their asthma is no longer even temporarily relieved by these hypodermics, as shown by the following cases:

Case II.—No. 1308, July 12, 1923, Mrs. H. A., Grand Island, N. Y., aged thirty-two, weight 139 pounds, married eight years, two children, asthma since the age of seven, attacks came on and off until seven years ago; asthma severe with two pregnancies and extremely bad for last seven years. Asthma most of the time, sitting up night after night. Was in bed last year from August to October and not able to work until February. She had a slight rise in temperature with the asthma during this sickness. A great deal of coughing with soreness in the chest, especially in the region of the trachea. She had night sweats with the asthma. There was considerable intestinal gas and the asthma was worse after eating, especially supper. She had an operation on her nose three years ago. Five years ago she almost died from influenza—in bed five weeks. The bowels were constipated. Her father had had rheumatism all his life.

This patient had given herself hypodermics of adrenalin for five years and her arms and legs were black and blue and full of needle abscesses. The hypodermics at first gave her but short periods of relief and then failed to do even that. The patient is still under observation and while she has a few reminders of asthma in the fall of the year, has not had to sit up nights or lose any time from work. She had but one severe attack of asthma on September 5th while visiting in Toronto, where she called in a physician for a hypodermic of morphine and atropine.

Case III.—No. 1375, January 22, 1924, Miss M. M., Elmira, N. Y., aged twenty-three, weight 136 pounds, occupation teacher, asthma for two years. Often sat up all night with severe attacks and was up every night two or three times. Had had several operations on the nose since her asthma began and last June had her tonsils removed, after which she was extremely ill, had asthma night and day and sat in a chair for a week. For the last year and a half she had been giving herself hypodermics of adrenalin three or four times a day. Her arms and legs were black and blue and full of needle abscesses. The hypodermics finally gave her but a few minutes' relief. This patient responded satisfactorily to treatment but her cough persisted for some time with uncomfortable asthmatic reminders for which she would occasionally resort to adrenalin until February 5th, when she discontinued its use. She had lost the sense of smell from her nasal operations and her nasal polypus returned so she had to have it removed in November. At the last report, she still coughed at night but had no asthma. She was not able to teach for one and a half years, although continually under treatment. This year, 1925, she is doing private tutoring.

In uncomplicated cases the patients, if properly instructed and are cooperative, seldom require anything for temporary relief, such as adrenalin, morphine, cocaine or gin.

A study of 1,408 cases of asthma during the last thirty years has demonstrated that in the majority of uncomplicated cases the patients can be educated to live without incapacitating asthma. Many of these patients have had no signs of asthma for years, as shown by the following cases:

Case IV.—No. 88, August 28, 1905, Miss J. E., Buffalo, N. Y., aged thirteen, asthma since two years old, attacks coming every seven to thirty days and lasting from three to six days, sitting up nights during the attacks. The patient is still under observation, which gives a period of twenty years' study. May 8, 1908, the patient began to menstruate, at the age of sixteen. The patient had a few attacks of asthma when she would go to the country and stay over night in the fall of the year. She also had a few

attacks at home, during the spring and fall of the year. On June 18, 1923, the patient stated that she had had no asthma for eleven years, except two attacks, one at Port Maitland, June 16th. The patient was last seen October 9, 1924, when she was still free from asthma. She is now married and has two children.

Case V.—No. 150, February 10, 1909, Mrs. V. T. Greenwood, N. Y., wife of farmer, referred to me by the late Dr. Harvey P. Jack, of Hornell, N. Y. She had had asthma for seventeen years almost constantly day and night, always worse in April, September and October. She was better in the dry summer months of June and July. She gave a family history of rheumatism. This patient has practically had no asthma from the time she began treatment up to present time. On October 8, 1920, she had a little reminder and a weak spell, which seemed to be due to low blood pressure. October 24, 1921, she moved from a hill to a valley where she had considerable bronchitis and cough but no asthma.

Case VI.—No. 698, March 2, 1915, Miss T. Z., Buffalo, N. Y., aged nineteen, weight ninety-two pounds, referred by Dr. George L. Fischer, Buffalo, N. Y. Asthma since three months old, every night, more or less, and a bad attack about once a month which compelled her to sit up nights. Was worse in the summer-autumnal season. She had had convulsions until three years of age. Menstruation began at age sixteen and occurred but once every two months. This patient has worked every day since I saw her and has had practically no asthma. Patient still under observation.

In about eighty per cent. of my uncomplicated cases of asthma I have been able to educate my cooperative patients to live as these asthmatic patients have, without incapacitating attacks.

The following case shows that in some cases of complicated asthma where the unstable blood is extremely sensitized to seasonal blood disintegrating meteorotelluric phenomena, the patients should migrate or hibernate during their unfavorable seasons. This case also shows how the asthmatic can be educated to overcome his handicap.

Case VII.—No. 1111, September 11, 1920, Mr. W. K., Lancaster, N. Y., farmer, aged fifty-five. Patient had had asthma for twenty-five years. Sat up nights every fall. Asthma not so bad in the middle of winter and in the summer. In May, 1921, the patient had a dropsical condition of his face, feet and hands due to his impoverished blood. The blood dropsy disappeared by July 1st. This patient is still under observation and he has worked hard on my farm, spring and summer, with no signs of asthma. However, the cold dewy nights of November would bring on asthma and he would be laid up for about two months.

Last summer I got him to take clabbered milk, vegetable, fruit diet, and after testing him out I added a hard boiled egg to his breakfast and beef, lamb or fowl to his noon meal. He worked all summer and felt well, with no asthma of any account and no blood dropsy. On November 9th he had an attack of asthma and we thought that he was in for his usual hibernation. I got him interested in my gas filtering ventilator for his upstairs bedroom and had him keep a fire going all night.

To overcome his blood dropsical tendency, which was due to a blood extremely low in blood elements or chemicals, his diet was corrected, adding more vegetables. His blood rechemistration treatment was increased by adding, when indicated, other blood elements or chemicals as potassium nitrate, sodium phosphate, ammonium chloride and sulphur. He was taught to wrap a woolen scarf, that had been saturated with naphtha gas by keeping it, when not in use, packed in a paper sack containing naphtha balls, over his nose and mouth to warm and soften the inspired air, when walking out in the cold, dry, frosty air.

As a result of these suggestions and blood rechemistration additions, he went through the winter of 1924-25 without any serious trouble. He was in the barn every day and was not propped up one night with pillows, for the first winter in twenty-eight years.

The asthmatic's unstable blood, when in equilibrium and when fed within its metabolic limit, is not sensitized to foods, any more than that of normal people. From a study of 1,408 cases I have found only three patients who were positively sensitized to foods, when their blood was in equilibrium, one to buckwheat and two to fresh fish. Sweet milk has given several asthmatics an acidosis so that it had to be changed to clabbered milk. I have never produced an acidosis with clabbered milk.

There are many agents that will disintegrate the unstable blood of the asthmatic so that an attack of asthma results. The agents which disintegrate it most frequently are heat retention humidity, chilly humidity, hematolytic atmospheric gases and putrefactive products reaching the blood through food, water, or as a result of intestinal putrefaction, traumatic, puerperal, postoperative, venereal, inoculative or focal troubles and accumulated metabolic products.

The reverse or the accumulation of septic material resulting from a blood disintegration producing swollen, lymphatic glands, tonsillitis or boils is more frequently the case.

The following case shows what can be accomplished by educating an asthmatic with an extreme and unusual complication.

Case VIII.—No. 1269, October 18, 1922, Master E. M., Buffalo, N. Y., aged eleven, weight sixty-three pounds. Patient was a blue baby at birth and is still blue with congenital cyanosis, blueness more pronounced with attacks. He has asthma most of the time, but severe attacks four times a year, worse in the spring and fall. He had influenza in 1918, was in bed for seven weeks. This was followed by running ears, which he still has at times. Tonsils were removed at four, and he nearly died during the operation from the effects of ether. Patient was first seen in bed with one of his severe attacks which compelled him to sit up day and night. He is still under treatment and has had no severe attack except on September 9, 1923, when he was compelled to sit up for one night. Patient had whooping cough in the summer of 1924 but no asthma with it. On May 9, 1925, his weight was eighty-four pounds and he is going to school and playing games as he has not done for three years.

Duke (2) has demonstrated how the capillaries respond to cold and other physical agents. Dry, frosty

air congests the capillaries of the asthmatic's air tubes and produces dyspnea. This will be relieved on entering a warm room unless it is severe enough or long enough to produce a suboxygenation, blood disintegration, in which case it results in a genuine attack of asthma.

The blood is the biochemical medium between meteorotelluric phenomena on the skin respiratory side and the food on the gastrointestinal side, therefore everything pertaining to life has a good or bad influence on the asthmatic.

A study of 1,408 cases of asthma during the last thirty years has demonstrated that asthma is due to an unstable blood condition, that the attacks are caused by a disintegration of the unstable blood, and that the instability of the asthmatic's blood renders it hypersusceptible and sensitized for life, in many cases, to numerous hematolytic agents, the chief of which is hematolytic, meteorotelluric phenomena.

Many asthmatics have complications which need special treatment. Those having tuberculous complications or with marked tuberculous tendencies should have the attitude or mountain treatment where they will encounter less hematolytic heat humidity retention and less hematolytic, atmospheric gases.

Asthmatics with heart complications or with marked nerve exhaustion should have rest treatment. Asthmatics with marked gastrointestinal disturbances need special treatment. Many asthmatics have ruptures and hemorrhoids which must be attended to.

After the unstable blood of the asthmatic disintegrates and becomes loaded with disintegrated material sufficient to produce an attack of asthma, it flows in small, dark drops with a high viscosity, rapid coagulation, thick consistency and a rapid, dirty brown, hydrogen peroxide reaction. When viewed under a microscope the cells are characteristically glued together forming an opaque, shapeless, adherent mass, requiring an unusual degree of pressure on the cover glass to differentiate the cells. The cells, when differentiated, shows that many of the erythrocytes are disintegrated as shown by their granular, star shaped appearance. The leucocytes are often increased; neutrophiles are often found; eosinophile cells are generally increased. The blood is slow to be absorbed by the test paper and shows a high hemoglobin scale.

The urine is characteristically dark brown or bloody brown, with a high specific gravity, and showing an acidosis and indican. At this stage the blood's metabolic equilibrium is reversed and its existence depends upon its ability to dump disintegrated material instead of absorbing nourishment. The blood now is sensitized to all foods and all foods should be withheld. Food, if taken at this stage, simply putrefies, thus adding poisons to the already overtaxed, disintegrated blood. During the urgent struggle of the blood at this stage to maintain its vitality, the patient should be kept quiet, as the least exertion produces a fatigue intoxication.

Dry, hot air, or a room temperature of seventy degrees with sunlight in the day time or an electric light at night, will aid the blood in dumping its disintegrated material by increasing its vitality.

If the disintegration is followed by a marked febrile reaction the fever aids the blood in dumping its disintegrated material to such an extent that this disintegration is generally not followed by asthma. The asthmatic should, therefore, never take anything to reduce his temperature as aspirin, the salicylates, antipyrine or the coal tar products.

The temperature of the body should be increased by hot clay poultices, hot foot baths, the drinking of hot water and the inhaling of hot saltpetre smoke. The hot saltpetre smoke inhalation also favors blood dumping by expectoration. The blood dumping should also be assisted by castor oil catharsis. Ipecac emesis or vomiting also assists the blood dumping process.

After the process is completed, the blood reaches the anemoequilibrium stage. At this stage the blood flows in large, rapid forming drops with a low hemaglobin scale and rapid test paper absorption. The blood now has a low viscosity, slow coagulation, thin consistency and a pinkish white, hydrogen peroxide reaction. Under the microscope the blood spreads easily and has a marked rouleau formation, often appearing in island like groups.

The urine is usually quite abundant, of a low specific gravity, of a pale, whitish color, and slightly acid in reaction.

At this stage feeding should cautiously be started, beginning with a whey diet and orange juice and gradually increased to clabbered milk and well cooked vegetables. If the asthmatic, at this intermediate or anemoequilibrium stage, eats beyond his blood's metabolic capacity, the viscosity of the blood becomes high, resulting in dyspnea. This dyspnea, if long continued, will result in a suboxygenation blood disintegration and a new attack of asthma.

After a month's freedom from asthma, I test my patients with eggs and meat.

Asthmatics stand operations poorly and are often made worse by them, especially operations on the nose and throat. People who have never had asthma have been rendered asthmatic by operations as shown by the following cases:

Case IX.—No. 1151, February 8, 1921, Mrs. K. W., Buffalo, N, Y., aged forty, weight 158 pounds, tonsillitis and quinsy four or five times a year, especially spring and fall for ten years, in bed ten days with attacks. Tonsils removed three years ago. Showing an increase in temperature nearly every day since the tonsils were removed with severe leucorrhea, and for the last four weeks has had asthma and bronchitis. In bed six weeks before consulting me. On February 12th the patient still had a temperature of 99.8°, with hemorrhoids and an acid stool. February 15th there was no asthma but still an increase in temperature now and then. The patient began to recover rapidly and had no asthma until March 7th when she had a mild attack of dyspnea with a temperature of 100°, while visiting in Jamestown. After this the patient continued to recover and has had no trouble since. This patient also had lumbago for two winters after her tonsils were removed.

"Hertzberger declares that none of the current theories explains asthma while some actually contradict the facts observed" (3). This statement is positively true of the authoritatively established nerve reflex spasm theories.

The blood origin of asthma is most convincingly demonstrated by its frequent complication or alternation with urticaria, eczema, pimples, boils, ab-

scesses, rheumatism, migraine or leucorrhea. This is shown by the following case:

Case X.—No. 1349, April 3, 1924, Mr. W. F. G., Buffalo, N. Y., aged fifty-four, weight 158 pounds, married thirty years, two children living. The patient had boils at the time of the consultation and stated that he had them when a boy and that he had had three hundred boils in the last three years. Had had asthma for the last three years in a severe form. Two years ago was home for seven months and not able to do anything. A year ago he was home five months.

The patient continued to have boils after he began treatment and in October, 1924, he had an abscess on his thigh that put him in the hospital where it was lanced and drained. He did not have any distressing asthma with this abscess and his asthma did not bother him much for about six months. This time the asthma came from a boil in the nose, following a boil on the neck. This nasal boil infection went from the nose to the larynx, trachea and bronchi, making his asthma troublesome, but he did not stop work until April 30, 1925. He now began, as I advised, rest in bed, castor oil and mineral oil, starvation, blood rechemistration, treatment, with hot poultices, hot foot baths, hot drinks, saltpetre stramonium belladonna smoke inhalations, gin. As this attack of asthma was unusually long and distressing, the patient and his family requested something more for relief. After talking over the hypodermic side of relief, we decided to first try a weak solution of cocaine (five grains to the ounce) to be inhaled from a nebulizer. Accordingly, I left him a prescription for the solution. I also added to his blood rechemistration a five grain tablet of ammonium chloride and a five grain tablet of sodium bicarbonate to be taken every hour, followed by a cup of hot water. The next day when I called I found that his asthma had been so much benefited by the ammonium chloride and the sodium bicarbonate that he had not used the cocaine atomizer. His recovery from this date was satisfactory. Asthmatics, when possible, should be educated to control their attacks, without resorting to hypodermics of any kind.

The following case shows how the disintegration of the asthmatic's unstable blood may alternate between a nonfebrile reaction and asthma or a febrile reaction and no asthma:

Case XI.—No. 824, August 30, 1916, Mr. J. S. A., Java, N. Y., farmer, aged thirty-five, weight 153 pounds. This patient had asthma since twelve; extremely bad last year, worse from August to March. Sits up at night with attacks. Pneumonia at twelve, followed by asthma. Had fever spells three or four times every fall and winter, temperature 102° to 103° with chills which confined him to bed for a few days with each attack.

Mother's mother had had asthma all her life, died at the age of eighty-four. His mother had had asthma ten years ago, one winter, still a little asthmatic at times, aged fifty-nine. One brother had asthma for five years, mostly winters, aged thirty-two.

This patient is still under observation and during these nine years he has worked hard on his farm and has had practically no asthma except in the fall of the year from August to January, when the night ground gases, with the chilly, heavy, dewy nights, would disintegrate his blood with either a nonfebrile reaction and asthma or a febrile reaction and no asthma. Some falls it would alternate between asthma and fever.

On November 18, 1918, the patient had a spell of fever resembling typhoid. On consultation with Dr. C. M. Smith, of Johnsonburg, N. Y., we pronounced it typhoid. His chest was full of râles during the typhoid, but he did not have any asthmatic dyspnea. This sick spell lasted until January 26, 1919.

On September 9, 1919, patient reported to my office, stating that he had worked hard all summer with no asthma except for the last two weeks when he began to have some asthma alternating with spells of fever, which began about August 20th with chills. On October 3rd, patient had no asthma and was feeling fine.

On March 31, 1920, patient stated that he had had no asthma all winter, except reminders when walking outdoors on cold days. Had influenza in January, in bed for one week, no asthma with it, but some rise in temperature. August 23rd, patient had no asthma all summer. October 7th, the cold nights with their heavy dews and ground gas accumulations had given him a few periods of rise in temperature, but no asthma until the last few days, then only reminders.

January 24, 1921, patient had a good winter with no asthma. April 14th, patient had a good spring. August 23rd, patient had no asthma all summer and worked hard. A few August reminders. October 20th, patient had no asthma until October 15th and 16th when he had chills, followed by rise in temperature. After this he had some asthma.

August 31, 1922, Patient put in a good winter and summer with no asthma until five days previously. November 6th, patient had a good summer and fall with no asthma. Had some rheumatism in his right elbow.

September 11, 1923, patient had a good summer and winter with no asthma. On August 25th, he began to show an increase in temperature and was in bed a half a day at a time for one week. He stated that he often worked while having a temperature. Temperature 102° to 103° at times. Had some asthma between fever spells. December 10th, patient had had no asthma and was feeling fine.

February 15, 1924, patient had had no asthma. September 19th, patient had no asthma all summer, but a little asthmatic since September 1st. Chills September 17th, 4 p. m., followed by rise in temperature. No asthma with this. Temperature in office was 99.8°. November 29th, patient had no asthma.

March 2, 1925, patient had had no asthma all winter.

This man's farm of a hundred acres is located in a craterlike valley, looking as though it had once been a lake. A little creek runs by his house and barn. His farm makes an excellent pocket for night, ground gases to settle in. In October, 1920, while out on a hunting trip, I stayed all night at his house on a chilly, windless, heavy dew night with a black frost and in the morning the ground gases were evident. At this visit I advised my patient to heat his house with a furnace, sleep upstairs, and put in a gas filtering ventilator.

Rackemann asks, "Why do not many more individuals exposed to dusts such as orris powder and

horse dander become sensitized? There must be in certain individuals, and luckily not many, a tendency to develop hypersensitiveness. The nature of this tendency is unknown" (4).

It is evident that this tendency is due to instability of the blood or in other words, allergy of the asthmatic is due to instability of the blood. Grain, seeds, animals, hay and straw generate hematolytic gases.

The asthmatic can easily tell whether it is a dust or a hematolytic gas that gives him asthma by simply using the United States Universal gas mask to be alternated with a sponge or wool dust mask. If the dust mask does not protect him and he is protected by the gas mask, it is a hematolytic gas that is causing the trouble.

If a summer coryza victim or an asthmatic can work with a grain threshing machine, a hay press, or around animals in the winter, with no regard to his diet, without having coryza or asthma, it demonstrates that the cause of his coryza or asthma is neither dust, gas nor food, but a heat retention.

Summer coryza victims and asthmatics must be educated to guard against heat retentions or heat humidity hematolytic crises on hot, windless, humid days by either resting in a shady, cool room with a fountain and an electric fan, riding in a covered vehicle with open windows or exercising vigorously enough to produce a free perspiration. Some should migrate to a cooler location. Heat, humidity, high blood viscosity or concentration of the blood through loss of fluid by perspiration should be guarded against by the drinking of plenty of water, according to Flinn, Barbour and Engel (5).

Gas is the most immediate essential chemical of our existence. We can live but three minutes without oxygen gas, three days without water and thirty days without food. Some of the agents that disturb or contaminate our atmospheric oxygen are overpopulation, combustion, destruction of forests and atmospheric vibrations from explosions, engines and airplanes.

There are now accumulated enough scientific facts concerning asthma to enable the general practitioner to treat cases of uncomplicated asthma as indicated and to educate them to live without incapacitating asthma.

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341 West Utica Street.

The Technician Problem*

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The ever increasing importance of chemistry in medical diagnosis has made analytical work of a more complicated type a necessity. The larger and some of the more progressive smaller hospitals have established separate chemical laboratories and have put competent biochemists in charge.

It is the purpose of the present paper to discuss briefly a problem which has arisen contemporaneously with the necessity for chemicodiagnostic work, a problem which presents a grave danger in many respects: the problem of the inadequately trained technician in the chemical laboratory. Some hospitals, on being confronted with ever increasing requests for blood analysis, may seek the easiest way in solving the problem. They decide to equip a chemical laboratory. The usual procedure then consists in building a few shelves in a neglected corner, haphazard buying of a minimum of equipment and employing a chemical technician. This technician is supposed to do complicated chemical work, mostly of a microanalytical nature; go through procedures which require training of the highest type and perfection. Not only that, but quite frequently the results must be obtained in a minimum amount of time and must be absolutely dependable.

In order to acquire a semblance of preparation for the work, the person chosen tries to go through some sort of training. This instruction is usually obtained by either doing routine work in some commercial clinical laboratory or by taking a course in a technicians' training school. The candidate very often has not even completed a high school course. His or her knowledge of chemistry and physics is almost nil and the general education entirely insufficient. In spite of this meagre foundation, the student technician is put through a laboratory course and is expected to acquire the technic of some of the most delicate analytical procedures in an absurdly short period of time.[1]

It must be admitted that this technician will be able to get results of some sort. This can be explained by the fact that most of our blood analytical methods are of the colorimetric type. Unless the worker skips several lines of the printed directions, a color will develop in the solution under examination and a "reading" will be obtained. The technician makes a report and not infrequently will even be asked to interpret the results.

This whole situation constitutes a grave menace. There is no one to check up, to tell when and where a mistake has been made. The mere fact that duplicate results show agreement does not vouch for the correctness of the findings; it probably means noth-

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[1]One training school lists a course in blood chemistry requiring forty laboratory hours and teaches special urine analysis, inclusive of colorimetry, cryoscopy, and other essentials in the same amount of time.

ing more than a duplication of the same error. Very often the solutions are bought from some supply house, are used until gone, without any attempt of standardization or assay being made. The short training period and the complete absence of knowledge of the necessary fundamental sciences prevent the technician from judging if one or more of the reagents are fit to work with or not.

The question necessarily arises how the problem could be approached. The solution may present difficulties in hospitals of small capacity and limited means. We admit that many of these institutions cannot afford to employ a graduate biochemist to take charge of the laboratory. A well trained technician, however, can do the routine work, but only when under the rigid supervision of a competent chemist familiar with the task in its fullest scope.

Undoubtedly the opinion will be advanced that the pathologist or some physician could just as well supervise and control the chemical laboratory work. It must be admitted that there are a number of physicians capable of doing it, but those are few and far between.

How many practitioners could make a N/50 acid or an alkali if given an analytical balance and the necessary chemicals and glassware? How many could standardize a burette or pipette? In fact, how many could define the term normal sulphuric acid? Comparatively few medical men are thoroughly familiar with the chemical composition of the blood in health and disease, the importance of the variations and deviations from the accepted normal contents and their diagnostic application. We know of a case where a fake report of a blood sample was shown to several physicians. This report gave the number of milligrams of urea nitrogen about ten per cent. higher than the nonprotein nitrogen, but not one noticed the obvious nonsense.

While the diagnostician must necessarily keep himself informed of the advancements made in biochemistry, he cannot be expected to be an expert in chemicoanalytical work. He would not attempt to operate an x ray machine or an electrocardiograph himself, but neither would he accept a röntgenogram made by a person who learned to manipulate a few switches and to develop photographic films by taking a forty hour course.

The fact will be mentioned that we have successfully employed technicians in pathological work. This comparison is not to the point. The final diagnosis in this case is made by the pathologist, either resident or visiting, and not by the technician. If a section is cut too thick or is faulty in some other respect, if a staining process has been carried out in a negligent manner, the pathologist will be able to tell that something is amiss. As mentioned before, chemical processes are apt to give some sort of a result in most of the cases, and only competent supervision will prevent errors that may be of the gravest consequence, or may even mean the loss of a human life.

638 Fourth Street.

Unrelated Disease a Factor in Diphtheria Virulence

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It is common belief in medical literature and in laboratory procedure, that virulence of organisms once lost in the human is not regained. As the basis of the view that diseases spread from some previous case of the disease, observations at variance with that view are of importance in the explanation of both endemic and epidemic frequencies of respiratory diseases.

Epidemiological observations over a number of years have shown me that whether diphtheria or scarlet fever, there was evidence that virulence was gained when a carrier of the disease (other than the convalescent carrier), passed through an attack of some other specific respiratory disease.

In a recent article (1), I showed that nasal diphtheria carriers could gain a positive virulence after an attack, for example, of measles, chickenpox, scarlet fever, whooping cough or mumps. Instances were given where a donor had a negative virulence while the recipient during or following the other specific diseases mentioned, had a positive virulence. After years of search for the direct proof where all the factors occurred in the same individual, I have recently, for the first time, met with such an occurrence. The instance was as follows:

Mary S., aged four, was found to be a nasal diphtheria carrier on May 28, 1925, when the origin of a missed case of the disease in her brother, Frank, aged three, was sought. Both the original mixed field and pure fishing cultures from Mary gave negative virulence tests while those for the throat culture from Frank were positive. On June 13, 1925, measles developed in Mary.

When she was convalescent, on June 28th a request for a virulence on the culture taken on that date was made. Both mixed field and pure fishing cultures were returned as having positive virulence.

CONCLUSION

It is my opinion and experience that the cyclical frequencies of respiratory diseases are dependent on the tides of carriers with virulence regained through immediately preceding unrelated respiratory disease. Weeks, months or even years of freedom of cases of any one disease may thus be followed by its reappearance.

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731 Elm Street.

Myxomembranous Colitis

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Synonyms.—Mucous colitis, myxorrhea coli, mucomembranous colitis, catarrhal colitis, mucous colic, and chronic intestinal catarrh.

Definition.—Mucous colitis is a disease of the intestines in which mucus is passed either alone or with feces in jellylike masses or in the form of a tough pseudomembrane resembling a tapeworm, and sometime as a complete cast of the bowel (1).

Etiology.—The disease may occur at any age and is found in males as often as in females. The condition may be brought on by abnormal endocrine function, infection of the intestines from focal lesions in the teeth, tonsils, appendix, or gallbladder, from ptomaine or chemical poisoning, from mechanical obstruction, and faulty metabolism.

Pathology.—Opportunities to perform necropsies upon patients suffering from myxomembranous colitis are so rare that little is known of its pathology. The mucosa may be normal, but usually the mucous glands and follicles are distended with mucus. There may be congestion or ulceration of the mucosa. The mucus is tenacious and stringy, and is sometimes expelled in the form of a cast of the bowel. The cast contains degenerated epithelial cells, leucocytes, and mucus, but contains no fibrin. These casts are often mistaken for intestinal parasites.

Symptoms.—In mild cases the passage of thickened mucus several times daily without discomfort may be the only symptom. In more severe cases there may be loss of appetite, mental depression, gas distention, abdominal soreness, headache, nervousness, colic, constipation alternating with diarrhea. The disease accompanying or causing the myxomembranous colitis may give added symptoms.

A brief history of the case from which the mucous cast shown in the illustration was obtained follows:

CASE.—Mr. G., aged forty-two years. After excessive indulgence in alcoholic drinks he complained of a peculiar sensation in the abdomen which began in the epigastrium and became localized in the cecum after two days. The patient was obstipated. Four days after the onset of the symptoms he complained of severe abdominal pain in the region of the descending colon. A proctoscopic examination at this time revealed a mass in the sigmoid resembling a tapeworm. On the fifth day, accompanied by a quantity of blood and excruciating pain, the cast was passed.

Treatment.—The treatment is directed toward the removal of the cause if found, the removal of the retained mucus, and the relief of symptoms. It is well to tell the patient that a long course of treatment is necessary for a cure.

The diet is varied to suit the needs of the patient but must be sufficiently nutritious to sustain the patient. The least amount of food supplying the greatest nutrition with the least residue is best.

General treatment should consist of supervising the hygiene of the patient. The medicinal treatment should be directed toward toning up the nervous and muscular system by strychnine and arsenic, and bromides as a sedative if necessary; relief of pain dur-

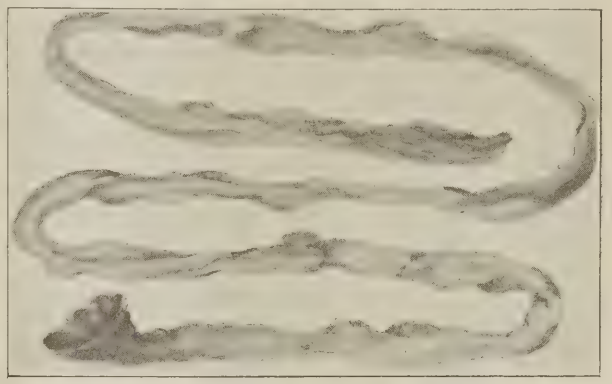

FIG. 1.—Mucous cast of the bowel measuring about thirty-five inches. Several inches were removed for sectioning.

ing attacks of colic by belladonna and codeine; arrest of fermentation and diarrhea by salol, salicylate of bismuth, ichthyol, and the sulphocarbolates; relief of

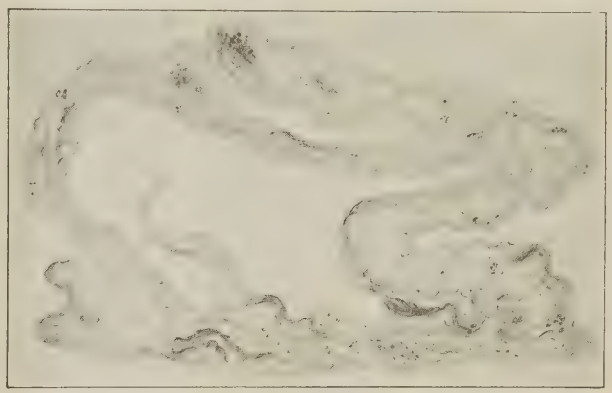

FIG. 2.—Cross section of mucous cast of the bowel showing mucous, degenerated epithelial cells and a few leucocytes. Note the lumen.

constipation by the use of mineral oil and bile salts.

Local treatment consists in preventing an accumulation of mucus by irrigations of the colon once a

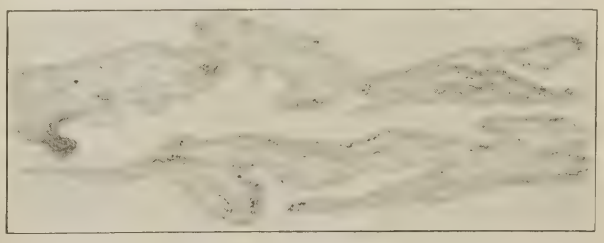

FIG. 3.—Longitudinal section of mucous cast of the bowel.

week or more often if necessary. Several gallons of water at 100° F. should be used. The bag should not be raised more than a foot or two above the

patient who is placed on the left side for the first gallon of water, and then on the back or in the knee chest position.

Surgery.—A pathological appendix or gallbladder should be removed, or any other source of infection should be cleared up, and any cause of constipation which can be remedied surgically should be attended to. The advisability of cecostomy or ileostomy is still debatable.

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1501 Union Street.

Sarcoma of the Bladder

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Sarcoma of the bladder is a rare condition, as is evidenced by the literature on the subject, which is mostly confined to reports of single cases. Geraghty (1) found two cases of sarcoma in 180 of bladder tumors. Albarran studied eighty cases of vesical malignancy finding two cases of sarcoma. Watson (2) found fifty-two sarcomata in 863 bladder tumors collected from literature, while Gardner (3) gathered seven in 369 cases. Yet the Mayo Clinic reports only one case in 262 treated at that institution. Such discrepancies in statistics leads to the suspicion that all the tumors reported were not sarcomatous.

AGE

This form of vesical tumor appears in early childhood but more frequently in adult life. Mixter (4) found only eight cases in children in eight hundred cases of bladder tumor. Munwes reports ninety-eight cases of bladder sarcoma with fifteen per cent. occurring in children under ten years of age. With so great a preponderance of sarcomatous tumors in the very young, Munwes suggests an embryonal origin of genitourinary tumors in children and Mixter agrees with this view.

Sarcoma of the bladder, whether in old or young patients, is exceedingly malignant. In consistency, these tumors are soft and friable, occasionally villous. They infiltrate deeply the surrounding tissues, the bladder walls, seminal vesicles, rectum, prostate, ureters, and even the bony pelvis.

SYMPTOMS

The principal symptom is sudden painless hematuria, which according to Geraghty occurs in sixty-two per cent. of vesical sarcomata. The amount of blood may vary from a blood tinged urine to a profuse hemorrhage. This may stop as suddenly as it began, appearing again in from a few hours to years. Diet and exercise have no influence on the appearance or amount of blood passed. The disappearance of the blood from the urine may often lull the patient into a sense of false security from which he is rudely awakened by learning later through examination by a careful diagnostician that his case is malignant and inoperable. The amount of hemorrhage is no indication of the size of the tumor, as small ones may bleed profusely while larger ones bleed little. Blood in the urine is a signal of trouble along the genitourinary tract. Therefore the source of any genitourinary hemorrhage should be diligently sought for.

Pain is the symptom next in importance. This can be divided into two classes: first, that due to involvement of the pelvic nerves in the malignant process, and second, that due to cystitis and ulceration of the bladder. The latter is much more common than the former. Added to this is frequency of urination

Fig. 1.—Hydronephrosis and dilatation of ureter.

tending to make the patient's life miserable through loss of sleep.

OBSTRUCTION AND RETENTION

When the growth attains a size sufficient to obstruct the urethral orifice, difficulty in urination even to the point of complete retention ensues. If the growth surrounds or involves the ureteral orifices, intermittent or complete hydronephrosis or pyonephrosis, if infection occurs, is the result. In the latter condition, it is only a matter of time when death takes place from uremia.

CONSTITUTIONAL

The combination of frequent and prolonged hemorrhages, absorption of pyogenic toxins from the ulcerated bladder and infected kidneys produces its effect in the general depression of health with resultant cachexia.

The following case presents some features of interest:

Case.—Male, aged twenty-nine, Mexican, laborer, entered the City and County Hospital on February 5, 1925, complaining of inability to urinate and swelling of the abdomen which had existed for a month. He gave a history of having had gonorrhea several years ago, but was apparently cured. His personal history was negative, except that two years before he had been struck in the perineum by the handle of a shovel. Examination showed a fairly well nourished

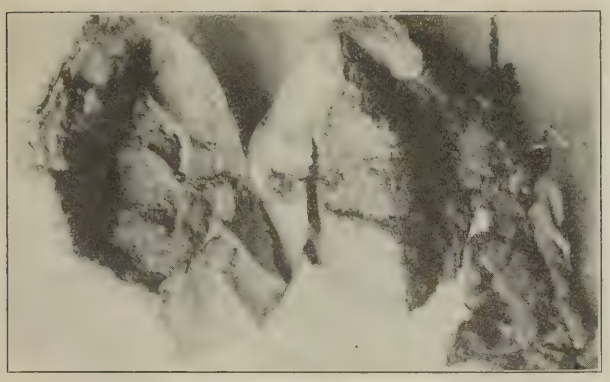

FIG. 2.—Sarcoma of the bladder.

male with sickly yellowish skin and facies indicative of pain. In the midline of the abdomen there was a large very tense mass extending from the symphysis to three inches above the navel and outward to the flanks. Percussion note over tumor was flat. Palpation elicited some pain. In view of the history of gonorrhea a tentative diagnosis of urethral stricture was made. A number 20 F. sound was passed which met with some scar tissue in the posterior urethra, but did not prevent passage of the instrument to the bladder. The sound was withdrawn and a soft rubber catheter inserted. This was followed by a spurt of exceedingly foul smelling urine which ceased abruptly. The catheter was pulled out and a clot was noticed hanging to it. Under novocaine one half per cent. anesthesia, a suprapubic cystotomy was done. It was noted that the bladder wall was extremely thick and gave considerable resistance to the knife. On entering the bladder a stream of foul purulent urine was expelled with great force. The bladder incision was enlarged and the organ found to be packed with clots of various sizes and in various stages of decomposition. Evacuation of the clots was followed by profuse bleeding which was not controlled by hot irrigations, but finally yielded to packing with gauze. Wound was closed.

The following day he said he felt better. Gauze was withdrawn without return of the hemorrhage. On the 11th, a persistent hiccough developed, and he complained of heaviness in his chest. A sample of blood for estimation of urea was taken. Temperature was persistently subnormal. On the 17th he complained of swelling of the penis and a periurethral abscess was found and evacuated of about thirty c. c. of pus with a urinous odor. Blood urea nitrogen 218 mgs. per 100 c. c. During his stay in the hospital he had great difficulty in emptying the bowel. Examination showed a tight constriction beginning just beyond the internal sphincter. It would not allow the index finger to pass. The patient quickly declined and died on the 22nd.

REPORT OF POSTMORTEM EXAMINATION

Postmortem held on February 23, 1925, by Dr. Willis W. Waite.

The body was that of a Mexican man, slender, fair nutrition. Surgical wound in the midline, above the symphysis, about ten cm. long. Body had been embalmed when examined. There were no external marks of violence and the examination was limited to the abdomen.

On section, there was no excess of fluid and apparently no adhesions outside of the pelvis. Pelvis was filled with the bladder, which had been opened surgically.

The bladder was thick walled, bound down with adhesions and completely filled the pelvis and was exceedingly difficult to remove. On removal, it was made up of a heavily indurated wall which on section was of a grayish white color and quite firm, and it was so large that it encroached on the rectum to which it was adherent.

Kidneys were enlarged due to dilated pelves. The left kidney also contained a large dilated sac—apparently a portion of the ureter.

The mucosa of the stomach was intensely congested. Palpation of the organs showed no lesions and were not removed.

A diagnosis of carcinoma of the bladder; hydronephrosis; chronic nephritis was made.

Microscopic examination showed a growth made up wholly of spindle cells quite closely packed. The microscopic diagnosis was a spindle celled sarcoma.

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Benign Tumors of the Anus and Rectum

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(*Concluded from page* 651)

Descourdes (9) reported eighty cases of intestinal myomas of which sixteen were in the rectum. They are nodular in shape and may be pedunculated or imbedded between the submucous and muscular layers, and may project into the bowel lumen or grow outward away from the rectum. If the myoma is small and imbedded in the rectal wall it may be mistaken for a scirrhous cancer. They may, however, grow very large. In the case reported by Descourdes, the tumor was the size of a cocoanut, presented at the buttock and made sitting difficult.

Cullen (10) reported fifteen cases of adenomyoma of the rectovaginal septum. Of these five were his own, the remainder were distributed as follows: Stephens five, Jessup two, Lockyer two, and Nadel one. Kellogg (12) has reported a case occurring in his own practice. Yeomans (13) reported one case.

The histological origin of these neoplasms is not always clear. Their most frequent site is on the anterior surface of the rectum in the triangular space back of the body of the uterus or the cervix, below the peritoneum and from which situation it may extend anteriorly into the uterus, laterally into one or both broad ligaments or backwards into the rectum. A given tumor may spread in all of these directions and fix all of the pelvic organs into one mass. The new growth may project as a definite nodule into the lumen of the bowel, pushing the mucosa before it or it may spread out laterally around the gut as an annular band. Myomas have also been found in men in the space between the bladder and rectum.

Symptoms.—The symptoms depend upon the size of the growth and the structures involved. If small and free in the rectovaginal septum or posteriorly in the hollow of the sacrum, they may exist without causing symptoms.

1. Profuse and painful menstruation is complained of by nearly all women. Cullen (10) reports a patient who suffered from painful floodings despite having a panhysterectomy two years before.

2. When the broad ligaments are involved pelvic neuralgia of the rectum and sacrum is distressing as a result of pressure on the nerves. This symptom is especially severe during the congestion incident to menstruation.

3. If the tumor projects into the lumen of the bowel, obstruction to defecation may occur, although when the mucous membrane becomes fixed it congests and dysentery and rectal hemorrhage are complained of.

Vaginal examination presents a thickening of the vaginal vault which may be nodular but is usually diffuse as the tumor spreads out laterally and resembles the inflammatory exudate of pelvic cellulitis. The vaginal mucosa covering the mass is puckering and bluish if the tumor is adherent to the vaginal wall. In the case reported Cuthbert Lochyer (11) there were blue points like varicosities in the mucous membrane.

Rectal examination.—The tumor can often be more clearly defined per rectum than by the vagina. The growth frequently involves the rectum and the mucous membrane is fixed and puckered.

Diagnosis.—The diagnosis is difficult and is to be differentiated from 1, polypus; 2, scirrhous cancer; 3, pelvis cellulitis.

A careful and thorough microscopical examination is necessary in every case. Primary carcinoma of the vagina is very rare.

Treatment.—1. Where small discrete nodules exist in the triangular space between the vagina and rectum they may be dissected out through a vaginal incision.

2. Where the growth invades the cervix or uterus an abdominal hysterectomy should be performed.

3. If the growth glues the rectum and uterus together, the uterus should be freed on both sides. The uterus may be carefully dissected free and by incising the vagina anteriorly and laterally the uterus and rectum can be lifted up out of the pelvis while a section of the anterior wall of the rectum is removed.

4. If the mass spreads around the rectum and narrows its lumen the bowel must be resected.

Of all tumors of the bowel those at the rectosigmoidal juncture are the most difficult to remove. In some cases the operation can be completed through the abdominal incision. If, however, a considerable portion of bowel must be sacrificed, the danger of infection, peritonitis and fecal fistula are very grave. In such instances it is far safer if the sigmoid is sufficiently long to mobilize the portion of bowel containing the tumor, close the abdomen and complete the operation by the perineal route, doing a Genu-Tuttle or similar extirpation of the rectum, preserving the sphincter ani and forming a new rectum from the sigmoid which is sewed to the anal margin.

CONGENITAL SACROCOCCYGEAL DEPRESSIONS, CYSTS AND SINUSES

In the median line in the sacrococcygeal region there occurs infoldings of the skin, which are congenital in origin, the result of a bud of epithelium turned under the external integument during fetal development. Because of the findings of tufts of hair within these pockets they are spoken of as pilonidal cysts. This condition is quite common although it may not cause any annoyance.

Désprès and Lannelongue say that one third of all new born infants have some degree of these sacrococcygeal deformities but that when adult life is reached only three per cent. of the people show this abnormality.

Of the three congenital abnormalities here considered, viz., depressions, sinuses and cysts, the depression is by far the most frequent. The sinus is much less frequent. It may be as much as two inches long with an orifice perhaps so small as to admit but a fine probe, or it may be large enough to be mistaken for the anus. This external opening is usually over the tip of the coccyx but it may be higher even over the lower end of the sacrum. Rarerly it lies between the tip of the coccyx and the anus.

Males present the great majority of cases, Criffon and Archibald (14) had two females in thirty-one cases. Lynch (15) reported fifty-one cases and all were males.

In some instances only a pit, depression or dimple exists as in Fig. 7, while in other subjects an epidermoid cyst exists which may later break down or become infected and a discharging sinus result as in Fig. 8. These different clinical conditions are but varying degrees of the same anomaly.

Etiology.—Many theories have been advanced to explain these cysts and sinuses. McNealy (16) in an exhaustive paper quotes from Keibel and Mall as follows:

"If one examines a sagittal series through an embyro eleven centimetres long it is seen that the extreme tip of the cord lying in the tail anlage has been closed off to form a simple epithelial sac. The lumen of the cord above this point becomes obliterated and there results a slender solid strand of nervous tissue which we know as the filum terminale. The epithelial sac becomes the vestige medullaire coccygien, the development of which is described by Tourneaux (*Precis d'embryologie humaine,* 2d. ed., 1909, pp. 348) as follows: At the beginning of the third month the neural tube still extends to the extreme end of the vertebral column into the tail bud and its slightly enlarged tip is closely united to the deep layers of

the skin. Toward the end of the third month the spinal column, developing faster than the soft parts, draws along the part of the neural tube that is adherent to it and whose extreme tip remains attached to the skin. As a result of this unequal growth the terminal or coccygeal portion of the neural tube becomes bent in the form of a loop, the more deeply situated limb of which is attached to the posterior surface of the coccyx (segment coccygien direct) and the other more superficial limb extends obliquely from a caudal and ventral position to one more dorsal and cranial (segment coccygien reflechi). During the course of the fourth month the more deeply situated limb, the segment coccygien direct, atrophies and disappears, while the more superficial one, the segment reflechi, continues to develop into the fifth month and gives origin to cell cords or cell masses which contain cavities, lined either with prismatic or pavement epithelium; these are vestiges medullaris coccygiens or paracoccygiens. These structures from the sixth month on suffer a progressive atrophy, but it is possible to recognize traces of them up to the time of birth."

McNealy concludes that these depressions and fistulæ are due to the more rapid growth of the soft parts causing traction of the ligamentum caudale upon the vestiges coccygiens which is intimately attached to the deep layers of the skin.

Lannelongue (18) believes that the persistence of a fetal connection between the external skin and the lining of the medullary canal causes the fistula, and that when the fistulæ are later constricted cysts arise. Mallory (19) from the study of sections through the sacrum and coccyx of various aged embryos is inclined to agree with Wette (20) that the site of the fistulæ and cysts is due not to insufficient development of the mesodermal masses but to delayed closing of the medullary canal or incomplete obliteration of a fetal canal.

Pathology.—The cysts are generally found immediately beneath the skin but may be found much deeper. Wette reported one cyst found in the spinal canal. Usually the cyst is adherent to the skin or actually a part of the skin at the point of epidermal invagination, and when dissected out they will be found to connect with the spinal column by a fibrous band.

The walls of the cysts vary in thickness, according to the amount of connective tissue present.

There are two types of cysts. The first type is due to dilatation of the epithelial sacs which constitute the vestiges medullaris coccygiens. In this type of cysts are found nerve cells. A second type of cyst results from dilatation of the deep part of a fistula, or from occlusion of a fistula near its exit. It is possible they may be formed by the skin anlage being entirely cut off from the surface and existing in the soft tissue.

Some of the cysts and fistulæ are lined with stratified squamous epithelium showing hair follicles and rudimentary sweat and sebaceous glands. When these sacs or fistulæ are opened hair, sebaceous and skin debris and cholestrin crystals are found and sometimes pus if suppuration has taken place.

Symptoms.—The cyst, although always congenital, may remain a long time in a dormant state causing little or no disturbance unless accidentally injured or irritated, when it may inflame and suppurate, causing, if left irritated, an infected ulcer, the surrounding parts are red and swollen and sometimes riddled with sinuses.

The surgeon is not consulted until pathological changes have taken place. The patient gives a history of irritation followed by one or more abscesses in the region of the lower end of the spine. Upon examination and separating the buttocks, one finds in the median line over the coccyx a small fistulous opening. There may be several fistulous openings. A probe introduced penetrates upward for one or two inches toward the sacrum, Fig. 9. On laying the sinus open, it is found to terminate in a small pocket perhaps an abscess cavity containing a coil or tuft of hair. The presence of this hair at the bottom of the sinus has always excited interest and curiosity.

Differential diagnosis.—When the depressions (pits) only exist they may escape notice altogether but these recesses are very difficult to keep clean and become filled with epithelial debris and dirt, which causes chronic irritation and infection and finally abscess. When seen at this stage, and it is rarely found earlier, it may be mistaken for a rectal sinus. If suppuration has existed for considerable time a complete fistula may exist or the retained septic products may burrow widely through the soft tissues and rupture on the surface elsewhere. McNealy reports a case with widely separated fistulous openings. Other cases have been mistaken for osteomyelitis of the sacrum or coccyx.

Where multiple fistulæ exist, the sinuses should be injected with bismuth paste and the various ramifications identified with a röntgenogram picture or fluoroscope examination.

Spina bifida are situated as a rule directly in the median line and should warrant careful investigation to make a certain diagnosis. Various mixed tumors may originate from these vestiges coccygiens and also dermoids are described as arising from the hind gut or mesenteric canal, but these cannot be considered here.

Treatment.—The simple pit or depression causes no inconvenience and does not demand treatment. Cysts and fistula which are not infected may be excised under local anesthesia. A wide infiltration is necessary of the skin and fascia. A careful dissection is necessary and therefore a complete circle of anesthetic wheals must be made. An elliptical incision is then made around the sinus. The encircled mass is then grasped with toothed forceps and lifted out of its bed as the incision is carried underneath. Every particle of the infolded epithelium must be removed or a fistula will result. The incision made wide of the sinus is carried well beneath the mass that all of it may be removed. If no infection is present the wound should be immediately closed with interrupted black silk sutures. The sutures pass through the skin, fatty subcutaneous tissue and beneath the base of the cavity. Only in this way can perfect approximation and obliteration of the cavity be effected. The sutures are tied over a roll of gauze. The wound is then dressed with collodion to further protect it against any possible infection from the anus. If infection occurs, the sutures should be immediately removed, and the wound allowed to heal by granulation. In other instances where the sinus has

several ramifications a general anesthetic is to be preferred to allow careful thorough dissection. This also applies where the sinus extends deeply or where it or the cyst are attached to the coccyx. Sometimes when the patient presents himself the cyst or sinus is acutely inflamed or abscessed and immediate complete removal is not possible without infecting the wound. Such cases should be dressed open and allowed to granulate.

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A complete list of references will appear in the author's reprints.

Bloodletting

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Abandoned by the profession on account of its abuse in former days, the practice of bleeding is, I believe, fortunately being resorted to again. The indications for letting blood are governed more by the symptoms than by the affection. Foremost among these may be placed venous hypertension, with orthopnea, cyanosis, oliguria and edema. These signs are the index of primary or secondary cardiac insufficiency. In renal processes bloodletting is indicated when myocardial failure arises, compromising renal elimination when the severe accidents occur; also in cardiac asthma and acute pulmonary edema during crises of hypertension. Frequently, this indication may necessitate arteriotomy.

It is an impossibility to estimate, *a priori,* the amount of blood to be let; the symptoms to overcome and the patient's condition are to be taken into account. From six to eight hundred cubic centimetres of blood may be regarded as an average amount. Generally a single bleeding will suffice as the object to be attained is to pull the patient through a dangerous situation.

Physiological data do not permit one to predict the effects of one bleeding. Whether it be the amount of blood to be let without danger, the effect produced on the pulse, respiration and changes arising in the figured elements of the blood, the presence or absence of thirst, it will be found that opinion differs from what physiologists tell us, because we are dealing, not with normal, but with pathological states. The phenomenon of thirst, in particular, is ordinarily observed following hemorrhage, but is not met with in subjects presenting edema. After the blood has been abstracted the economy calls upon fluids of the cells to repair the loss when the subject is normal and therefore thirst ensues, but when the patient is edematous he does not experience thirst for the simple reason that the network of connective tissue contains reserves of fluid which reestablish the humoral equilibrium.

It must not be supposed that the arterial pressure will invariably be reduced by bleeding as this is decidedly not the case. When the pressure is reduced by bleeding it has been noted that three factors are in play: 1, the importance of the bleeding; 2, the rapidity of the bleeding—which in some case produces accidents comparable with shock; 3, an individual decrease of normal tonicity of the vasomotors. Let it also be said that to reduce arterial pressure at least one litre of blood must be let.

From the clinical viewpoint the uselessness or even untoward effects of bleeding in permanent high blood pressure are to be noted, while the withdrawal of blood in hypertensive crises—with reserve in absence of accidents and contraindicated in cerebral hemorrhage—is decidedly indicated in paroxysmal dyspnea and convulsive nervous accidents. In these cases, by relieving the paroxysmal hypertension bloodletting will cause all the symptoms to subside.

Contrary to what takes place in the arterial system, withdrawal of blood always reduces the venous pressure. In asystolic subjects bleeding, instead of reducing diuresis, activates urinary elimination. By causing the fluid of edema to enter the circulation it removes a barrage; by increasing the differential pressure it increases cardiac energy, while by lowering the venous pressure it reduces stasis, especially in the kidneys. The rapidity of the flow of blood is increased and if the kidneys are not the seat of important lesions the output of urine will vary in proportion to that of the blood. This polyuria causes the edema to melt away, but while in some this takes place immediately, in others it is both slow to arise and is irregular.

Bleeding prepares the patient for the action of cardiac stimulants by reducing the barrage in the pulmonary circulation, kidneys and tissues. By causing the extravasated fluids to enter the blood stream, bleeding removes the barrage offered by the capillaries just like drastic medications. But bleeding alone in some cases may relieve the symptoms of asystolia, its action being similar to digitalis. By reducing venous hypertension, cardiac tonicity is increased and, on the other hand, by provoking endosmosis of the fluids of the edema it produces the same effect as digitalis in the first phase of its diuretic action.

Bleeding does not reduce azotemia; it is, however, indicated in eclamptic manifestations and uremia. We now know that in nervous uremia the convulsive accidents depend upon chloruremia and arterial hypertension and not upon nitrogen retention. Therefore, if bloodletting acts heroically in convulsive uremia it is because it overcomes the hypertensive crises and depletes the acute cerebral edema.

3 rue Bellot.

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Functional Diabetes

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Cases of diabetes may be divided into two contrasting groups; those with what may be termed functional diabetes, in which carbohydrate tolerance can be increased by proper treatment over a sufficient period of time, and those in which, no matter what treatment is employed for whatever length of time, the carbohydrate tolerance cannot be increased beyond a certain fixed limit. The latter type of the disease may be termed anatomical or destructive diabetes, since the degeneration of a certain portion of the islands of Langerhans has progressed beyond the possibility of repair, functional repair at least, whether or not any change of the cells can be demonstrated histologically.

Functional diabetes on the other hand represents an early stage of the disease, in which the degeneration of the island cells of the pancreas has gone on only to the first stage, to the hydropic degeneration of the beta cells. During this stage the change in the cells apparently is still reversible and by prompt and proper intervention, much of the tolerance for carbohydrates can be regained.

When the process has gone beyond the stage of hydropic degeneration of the beta cells, to a slight or a more extensive degree of fibrosis of the islands of Langerhans, by proper treatment the destructive process may be arrested, but the lost tolerance cannot be restored.

Clinically it was noticed years ago, that after a maximum degree of carbohydrate tolerance has been established in hospitalized diabetic patients, as time goes on, some will be able to assimilate increasing amounts of carbohydrates and maintain a normal blood sugar level, and the sugar free urine, whereas, in other cases, the carbohydrate tolerance never increases beyond the degree attained at the hospital. In the second group of cases any increase in the carbohydrate intake means an increase in the blood sugar content, and glycosuria, and the patient has to revert to the diet prescribed at the hospital at the time of his discharge.

Recently at the Physiatric Institute, Copp and Barclay (1) showed that in dogs in which a diabetic status had been established but in which the damage to the islands of Langerhans had not progressed beyond the hydropic degeneration of the beta cells, the process was still reversible. In these cases not only did a functional improvement result when a proper diabetic regimen, with insulin if needed, was instituted, but the cells of the islands appeared to be restored, as is shown by the photomicrographs published by these investigators. Such an early stage of diabetes therefore can be considered a functional diabetes since at that stage only the function of the pancreas is disturbed. If the process is allowed to go on, however, there will result a permanent, partial or complete cessation of the pancreatic function, according to the number of islands which have been permanently impaired. This study by Copp and Barclay is significant because it offers pathological evidence which is in harmony with our previous clinical experience.

An interesting report illustrating the reversibility of the degenerative process in the pancreas in early diabetes in man has recently been published by Boyd and Robinson (2). The authors describe the case of a boy nine years of age, who had had diabetes since he was two years old. His life had been maintained by treatment but his general condition was getting worse and he was able to utilize only fifteen grams of carbohydrates. He weighed but thirty pounds and his height was only thirty-nine inches. In December, 1922, insulin and an increased diet were prescribed as a result of which "his tolerance for carbohydrates trebled in the year" and it was possible to reduce the insulin from ninety to thirty units per day. "From a chronic invalid in 1922 he became the leader of the gang in 1923. He was killed by fracturing his skull when sleighriding. He lived only about three hours after receipt of the injury and an immediate postmortem examination was made."

In the examination of the pancreas, the authors found none of the degenerative anatomical changes commonly found in diabetics, but did find changes which were interpreted as a regeneration of the cells of the islands of Langerhans. Some cells were definitely hypertrophied and there was an apparent increase in their number, a point which should give much hope to the diabetic patient. The most im-

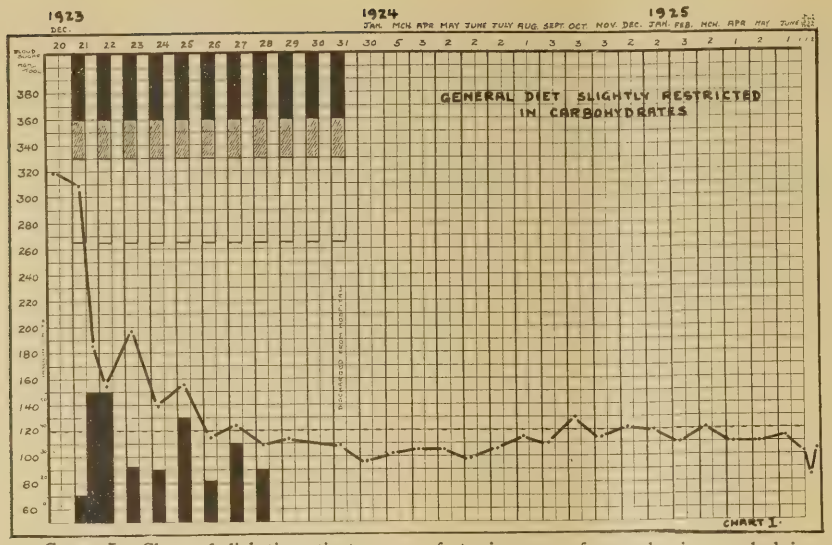

CHART I.—Chart of diabetic patient, a man forty-six years of age, showing marked improvement as manifested by the discontinuance of insulin and the maintenance of a normal blood sugar level over a period of two years. The long columns in the upper part of the chart indicate the diet, the black portion representing the carbohydrates, the shaded portion, the proteins, and the blank portion, the fats. Each square represents twenty grams. The columns in the lower part represent the daily insulin dose.

portant finding was that the beta cells of the islands of Langerhans which are believed to be most concerned in carbohydrate metabolism and are the first cells to be destroyed in severe diabetes were normal and increased in number. That is, by means of insulin and a proper diet the strain placed on the already functionally deficient cells of the pancreas was lifted and their normal functional capacity was resumed.

The authors state further that the distribution and prominence of the islets in the peripheral portions of the pancreas very strongly suggest the formation of new islands.

These findings are in accord with the reports of hypertrophy of the islands of Langerhans which have been made by various authors (3, 4).

Clinically we observe the results of the above processes quite frequently, but it has been difficult to secure confirmatory pathological data. Such an accidental occurrence as in the case cited above, therefore, is of great value since it provides an interpretation of our clinical experience.

It would appear that the progress in the following cases, in one of which insulin was used, while in the other only dietary management was employed, can be explained only by the assumption of such a regeneration of the islands of Langerhans as has been described.

CASE I.—The patient was a man forty-six years of age, with a familial history of diabetes. He complained of excessive urination and loss of weight. His family physician had prescribed a diet of cream, grapefruit and buttermilk, but during the preceding four months he had lost thirty-nine pounds in weight, and his symptoms were continually getting worse. When I first saw him his blood sugar was 318 mg. per 100 c. c. and he had a glycosuria of ten per cent. in his urine.

He was placed in a diabetic hospital, on a diet consisting of carbohydrates, gms. 100; proteins, gms. 60; and fats, gms. 128; making a total of 1800 calories. On the first day he received two doses of insulin of ten and fifty units respectively.

The insulin therapy was continued for eight days; the blood sugar fell to the normal level on the fifth day and on the eleventh day the patient was discharged from the hospital. Ever since his discharge he has been on a fairly liberal diet, even eating pie and cake occasionally. As is shown in Chart I, his blood sugar has remained normal for two and a half years, during which period he has been working hard at his trade, and has felt quite well.

On the basis of the considerations offered above the only way in which such a sequel can be explained is by assuming that we were dealing with an early case of diabetes at a stage when only functional changes—hydropic changes of the beta cells—had taken place in the islands of Langerhans, so that these cells as in Copp and Barclay's dogs reverted to a practically normal status. This regenerative process was no doubt promoted by the insulin, but even if only a low diet had been used, the same end result would undoubtedly have been accomplished. This case demonstrates also the fact that insulin, once used, need not be continued throughout the rest of the patient's life, a bugbear which oppresses the laity and even some of the profession.

CASE II.—The patient was a lad nine years of age, with no familial history of diabetes. He had had

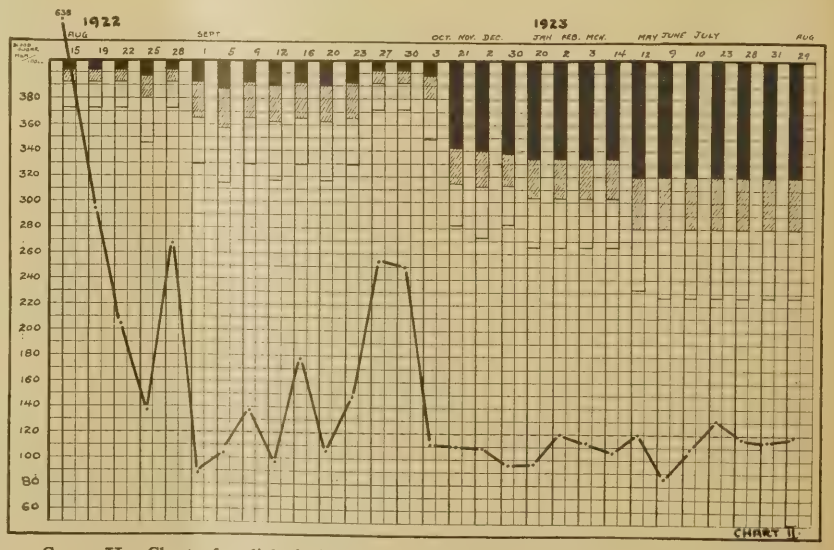

CHART II.—Chart of a diabetic boy nine years old showing maintenance of normal blood sugar level on gradually increasing diet.

measles, whooping cough, and scarlet fever, and tonsillectomy and circumcision had been performed at the age of four. He was brought in by his parents because of a socalled rundown condition.

Six weeks before he had begun to lose his appetite and to be nauseated. During these six weeks his temperature had been elevated and his condition had been diagnosed as glandular fever by the family physician.

He was first brought to the Clinic on August 15, 1922, when a glycosuria of 3.3 per cent. was discovered; the blood sugar content, four and a half hours after a meal, was found to be 638 mg. per hundred c. c. of blood, and acetone was present in the plasma.

The blood sugar level fell promptly on a low diet, but rose again the last of September, when the diet was further reduced, after which the blood sugar fell to the normal level where it remained for nearly a year in spite of an increase of the diet up to two thousand calories per day. The progress of this patient is shown in Chart II.

This case shows a comparatively rapid gain in tolerance in a young boy, after the blood sugar had been restored to normal by a regulated diet.

This, like the preceding case, is an example of the functional type of diabetes, in which the degeneration of the cells of the islands of Langerhans had not progressed beyond the possibility of restoration.

Although functional diabetes presents a very encouraging outlook for physician and patient alike, it does not mean that when a case of diabetes has once been demonstrated to be of the functional type and has been kept in control for a year or two, that such a patient is permanently "safe." He is not! We still have to stick to the old rule: once a diabetic, always a diabetic. The patient must never forget that he has diabetes, even though it be in a latent form, and I always feel uneasy when a patient increases his diet of his own accord, as often a splendid clinical result is spoiled by such an unwise procedure. There is a point of least resistance and when this is reached the tolerance fails and it is then too late for further regeneration of the damaged pancreas. It is thus far safer to keep a little below the limit than to overstep the dietary boundary.

The following case in which a splendid functional result was secured at first, but in which the tolerance broke down two years later, is cited as a warning to the overenthusiasm alike of the patient and of the physician:

Case III.—This patient was a boy of eighteen, who came to see me on July 14, 1922. He had had no childhood diseases, and there was no family history of diabetes. An appendectomy had been performed in 1911. He complained of weakness and a socalled dopy feeling which had lasted for about three weeks, during which time he had lost nineteen pounds in weight. Glycosuria had been discovered three weeks before I saw him. When I first saw him his blood sugar, two hours after a meal, was 333 mg. per hundred c. c., he had a heavy glycosuria and there was a large amount of acetone in the urine. The blood Wassermann test was negative.

From the protocol, in Table I, the progress of this patient can be followed. In two weeks a glucose tolerance test gave the result shown by curve 1, on

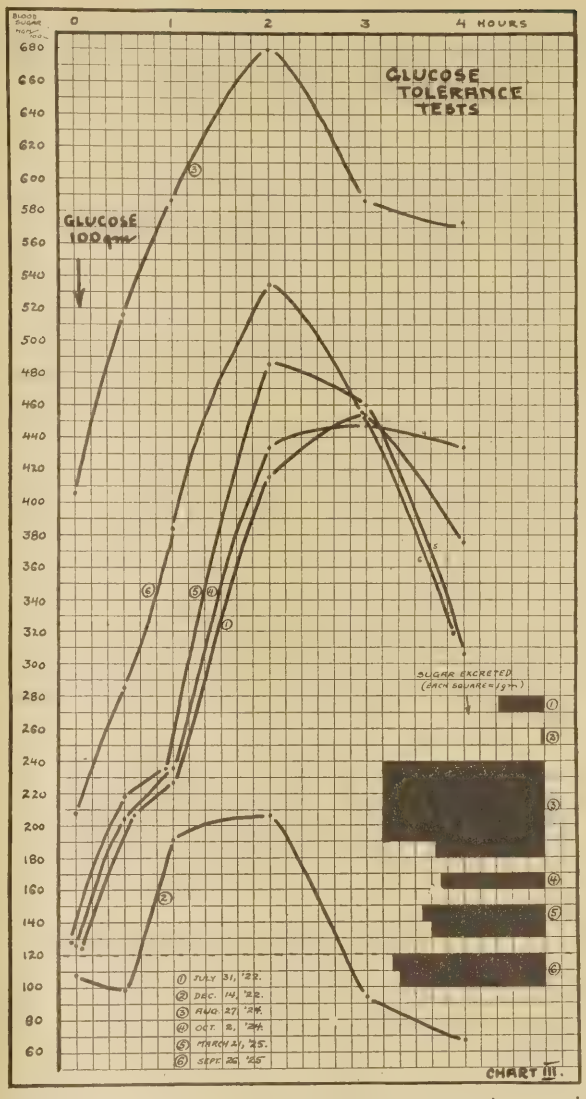

Chart III.—Repeated glucose tolerance curves, covering a period of three years, in the case of a diabetic boy, eighteen years of age. Sugar excretion is indicated in black columns at right.

Chart III. Although the fasting blood sugar was normal, this is a definitely diabetic curve and moreover, during the test the patient excreted 2.92 grams of sugar in the urine. Later the diet was increased to 2600 calories and the subsequent blood sugar estimations remained normal for five months, so it looked as though the diabetic condition was about cleared up. I made another glucose tolerance test which gave a curve suggesting a mild degree of diabetes (curve 2, Chart III), and only 0.18 grams of sugar was excreted. Thus, everything indicated that this was a functional type of diabetes which, under a proper diabetic regimen had nearly subsided.

In May, 1923, the patient went to Europe and I warned him to watch his diet carefully, but the native wines and beer proved too tempting to be resisted. When he returned in August, 1924, I did not at first suspect that the blood sugar level was high as he told me then that he had adhered closely to the prescribed diet, and I learned what had happened only after taking the glucose tolerance test, the result of which is shown in curve 3, Chart III.

The height of the curve and the excretion of 56.73

grams of sugar, together with a marked lipemia and acetonemia, showed what destructive changes had occurred. I placed the patient in the hospital and began using insulin and the blood sugar gradually returned to the normal level. Another glucose tolerance test (Curve 4, Chart III) gave about the same type of curve as curve I, but the patient excreted more sugar, namely 6.35 grams. At the end of the test I administered twenty units of insulin, as in the subsequent tests, and four hours later the blood sugar was 152 mg. per hundred c. c.

TABLE I

Protocol of Case III

Date	Blood Sugar mg. per 100cc.	Diet C.	P.	F.	Calories
1922					
July 14	333	75	40	15	600
" 17	333	15	20	40	500
" 20	265	15	20	40	500
" 24	191	15	20	83	900
" 26	147	15	25	93	1000
" 31	124	35	40	133	1500
Glucose Tolerance Test (See Curve 1, on Chart III)					
Aug. 4	130	30	40	126	1500
" 11	108	40	50	182	2000
" 18	106	50	60	173	2500
" 25	121	75	75	211	2500
Sept. 14	104	80	80	217	2600
Oct. 12	107	80	80	217	2600
Nov. 14	100	80	80	217	2600
Dec. 14	108	80	80	217	2600
Glucose Tolerance Test (See Curve 2, Chart III)					
1923					
Jan. 16	157	90	75	193	2400
Feb. 12	102	90	85	200	2500
Mar. 12	111	100	85	195	2500
May 5	96	100	85	195	2500
Went to Europe—Returning August 27, 1924.					
Glucose Tolerance Test (See Curve 3, Chart III)					
1924					
Aug. 27	405	100	60	40	1000
" 28	192	100	60	40	1000
" 29	344	100	60	40	1000
" 30	263	100	60	40	1000
" 31		100	60	40	1000
Sept. 1	256	100	60	40	1000
" 2	116	100	60	40	1000
" 3	173	100	60	40	1000
" 4	179	100	60	40	1000
" 5	165	100	60	128	1800
Discharged from Hospital on above routine.					
Sept. 12	172	100	60	128	1800
" 19	163	100	60	128	1800
" 25	152	100	60	128	1800
Oct. 2	126	100	80	120	1800
Glucose Tolerance Test (See Curve 4, Chart III)					
Oct. 9	114	100	80	120	1800
" 16	192	100	80	120	1800
" 23	192	100	80	120	1800
" 27	Came in with reaction				
	50	100	80	120	1800
Nov. 10	124	100	80	120	1800
Dec. 4	125	100	80	120	1800
1925					
Jan. 3	132	100	80	120	1800
" 31	141	100	80	120	1800
Mar. 21	127	100	80	120	1800
Glucose Tolerance Test (See Curve 5, Chart III)					
July 25	167	100	80	120	1800
Sept. 26	208	100	80	120	1800
Glucose Tolerance Test (See Curve 6, Chart III)					

Five months later the next glucose tolerance test was performed, giving curve 5, which was about the same as curves 1 and 4, but the sugar excretion was 14.3 grams.

Six months later another glucose tolerance test was performed, giving curve 6, which is nearly the same as the previous one, but the sugar excretion was 18.4 grams. This patient had apparently reached a stationary stage and perhaps never will be able to regain the tolerance he once had, although he manages to keep a normal fasting blood sugar level, and is able to work hard.

This case emphasizes the dictum quoted above: once a diabetic, always a diabetic. It demonstrates that no matter how good a functional result may seem, it is best to think twice before risking carelessness in eating. This boy had been able to take care of a good diet, was able to do any amount of work and to keep a normal blood sugar level; now he can still take care of a good diet, but only by taking insulin. He realizes now that his dietary indulgence wasn't worth while, but unfortunately it is too late. In this case, then, we assume that the degenerative changes in the cells of the islands of Langerhans have progressed beyond the hydropic degeneration of the beta cells and have entered upon the stage of fibrosis or permanent dysfunction.

CONCLUSIONS

1. There is apparently a mild type of early diabetes in which there is but a slight change in the islands of Langerhans, which we may call functional diabetes. This has been observed clinically for many years; and has been produced experimentally by Allen, Copp and Barclay, and others who have demonstrated a hydropic degeneration of the beta cells in such cases.

2. Under proper treatment much restoration of function and a histological restoration of the islands of Langerhans may take place.

3. In spite of apparent restoration of function, these cases will break down under undue strain.

4. Once the presence of a diabetic status of any degree has been established, adherence to the prescribed diabetic regimen should never cease; and the physician should maintain a continuous control.

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Rate of Elimination of Ingested Sugars in Phlorhizin Diabetes.—H. J. Deuel, Jr., and W. H. Chambers (*Journal of Biological Chemistry*, August, 1925) studied the rate of sugar excretion in fasting dogs rendered diabetic by phlorhizin, using fructose, glucose, galactose and lactose. The rate of elimination of extra glucose after feeding sixteen gm. of fructose is practically identical with that of glucose itself. The results with galactose suggest a more rapid excretion of extra sugar. With lactose the extra glucose produced is much less and its excretion lasts over a much longer period of time, the extra glucose not having been completely eliminated twelve hours after its ingestion. The amount of extra glucose eliminated in the urine when glucose, galactose, and fructose were fed represents a practically quantitative recovery.

The Relation of the Endocrine Glands to the Teeth in Rickets*

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My paper will be on the relation of the endocrine glands to the teeth, especially in rickets, one of the most obvious diseases of civilization.

I have chosen rickets for its endocrine dental pathology which, I know, you are not familiar with because endocrinology is not, as yet, a prescribed course in the dental and medical schools of this country. (The University of Pennsylvania in its graduate department has a chair of endocrinology presided over by Professor Sajous.)

I shall not go deeply into the reported etiology of rickets except to state that many theories have been advanced on its causation.

Some observers assert that it is caused by a deficiency of the fat soluble vitamine A; others to food containing too much starch; to overeating; to acidosis which causes decalcification of the bones; to infection, and lastly, heredity.

I believe it to be due, entirely, to an endocrine imbalance, and agree with those who believe that heredity is the cause, the inheritance of endocrine dysfunction from a hypoendocrinic mother.

The strain of pregnancy unmasks the latent endocrine insufficiency. The less marked the defensive reaction of the thyroid, parathyroids, pituitary, thymus, gonads and suprarenals the more virulent and unrestrained appear to be the effect upon the formation and resultant pathology of the teeth in the child. Acidosis is only a symptom of rickets, not its cause.

Rickets has been styled by many writers as the English disease because of its greater prevalence in the British Isles. Glisson and his contemporaries gave it the name "rhachitis, the spinal disease," because an affection of the spine appeared so often in their cases. Probably this was due to a hypothymic state.

Rickets show one all the endocrine dental pathology desired. Besides the bone lesions referable to the skull, ribs, spine, long bones, wrists, ankles, etc., we find delayed dentition. A child of two years of age may have only a few milk teeth, perhaps the incisors and a molar or two.

The teeth in this disease rapidly decay, frequently down to the gums where they appear as ragged black stumps. Of course, this same condition may occur in any wasting disease of infancy to some extent.

As in all wasting diseases, especially so in rickets, we find a calcium deficiency always present and quite commonly a lowered phosphorus content also. The phosphorus content of the blood is increased by giving extracts of the pituitary, thymus and the ovary.

It has often occurred to me that osteomalacia has many characteristics found in rickets and I have for some time believed that it was a late form. Calcium is an absolute necessity in all bone formation, the teeth included, because they are also bony structures.

The endocrine glands prominently identified in the development and protection of the teeth are the thyroid, parathyroids, pituitary, gonads, suprarenals and thymus. The other endocrine glands are so closely interrelated with the above that they, too, enter into the development also, but we know less about their action at the present time. I have often thought that the spleen is a calcium metabolic stimulant, preparing suitable calcium salts for presentation to the bloodstream and the impoverished body cells, changing the basic to an ionic salt similar to the action of the parathyroids.

The endocrine glands which we know govern the calcium content in our bodies are the parathyroids, thymus, thyroid, pituitary, suprarenals and gonads. The parathyroids, thyroid and thymus all have the same effect upon growth. They also act together as calcium retainers in our bodies. This leads one to realize that these glands are functionally and embryologically related. Unless these lime binders are activating normally there is nothing to hold and utilize the lime in the body, thus the teeth suffer along with the other bones.

In cases of rickets and marasmus the thymus gland has been found in an atrophied condition. The relation of the parathyroids to rickets was first suggested by Erdheim, in 1914. The fetus depends entirely on the maternal thyroid hormone. When the child is born its thyroid contains no iodine. Iodine is not taken up by the thyroid until several weeks or months after birth.

Some investigators consider the thymus function to be entirely a detoxicant. When we have a hypothymic function the toxins are not neutralized and this is a direct cause of rickets. Many clinicians think it advisable to use thymus gland therapy in all cases of rickets as a lime binder. The parathyroid glands are the most important lime binders in the body. The recent work of Vines in England and Collip in Canada has opened up a greater understanding of these little glands.

Collip states that overdosing with the active hormone which he has discovered may push the rise of blood calcium to a condition of hypercalcemia that may even become fatal.

Besides calcium deficiency in rickets, what other conditions do we find? Why this lack of lime salts? We find that the parathyroids, thyroid, thymus, pituitary, suprarenals and gonads are tired out in the mother and are underactivating. This hypostate accounts for the hypocalcemia. There is not sufficient lime to form good strong healthy teeth in the embryo.

A rapid excretion of lime and phosphorus from the body takes place when the glands which are the lime binders are not functioning and, singularly as it may seem, one of the first bony structures to be affected by this loss to the blood are the teeth.

In rickets it would be interesting to know what proportion of the cases of pluriglandular insufficiency are due to congenital syphilis. It is said that it is as high as three per cent. but I doubt if it is more than a half of one per cent. The pituitary, gonads and suprarenals are the most commonly infected and the thyroid not so frequently, in congenital syphilis.

*Lecture delivered to the Interns of the Forsyth Dental Infirmary, June 18, 1925.

Let us remember that the eruptive time of the teeth is a thymicopituitary function; the position in the jaw is a thyroid-thymus-pituitary-suprarenal-gonadal function; the quality of the teeth is a thyroparathyroid-pituitary function and the resistance to decay and infection is a thyroparathyroid function.

Rapid decay of the first teeth always indicates a thyroparathyroid hypofunction. Conclusive evidence suggests that there is a close relation between the thyroid and the parathyroids.

How does the resulting imbalance of the parathyroids, thyroid and thymus occur to cause the child this deficiency of lime in the teeth with the resulting rapid decay? From the mother during the prenatal period and soon after birth is the most obvious answer. Most of the mothers of rickety children are found to be in a hypoendocrine state. They are usually hypothyroid, hypoparathyroid and hypothymic. Frequently the suprarenals are also in a hypostate.

These mothers start before, at the beginning of pregnancy or soon after, with an underfunctioning thyroparathyroid condition. This condition results in an increased compensatory activity of the pituitary and thymus glands. These glands, overworked as they are by their added duties, soon play out, become exhausted, and henceforth are underactivating. Thus the resulting hypostate of the lime retainers of the body. When they should be normally active they become abnormally inactive. Lime that should go to form bone and teeth is lacking in a normal amount with a resulting deformity and decay.

The fourth week the embryo is about a quarter of an inch in size, the thyroid, parathyroids and thymus can be identified. The first or milk teeth begin to form at this time. A mother with a hypofunctioning of her parathyroids, thyroid and thymus cannot retain enough lime in the blood to form good strong teeth and thus her baby's eruptive time is long delayed, possibly two years or more elapses. She cannot supply sufficient lime for her infant's bones and softening of the general osseous system ensues. The bones are deformed and the teeth are delayed in their eruptive time and decay rapidly follows their eruption. That is what you find in rickets.

The embryonic thyroid, parathyroids and thymus immediately begin to functionate but are influenced entirely by the chemical substances of the mother's hormones until birth takes place. The products of the mother's glands affect the embryo's. There is a constant interchange of these substances from mother to embryo. If the mother's internal secretory glands are underactivating the embryo's glands are immediately affected the same way. If the mother's thyroid gland is hypofunctioning the embryo's thyroid is hurt, causing the various chain of thyroid syndromes to follow throughout the child's whole lifetime. Given a hypothyroid mother and we we will also have a hypoparathyroidism and a hypothymic condition associated because these three glands are so closely related, functionally and embryologically. When these glands are in a hypostate they are, as I have stated before, unable to retain lime enough in the body for normal use and this condition will cause dire results because the child's bones, teeth and nervous system will be affected by this lack of calcium.

Rickets is found in ninety-two per cent. of premature and twin infants. This shows an undoubted hypocalcemia at birth.

A hypothyroidism in the mother affects the thyroid in the fetus with resulting distortions, stunted growth of the bones and teeth and an arrest of development of the child as a whole.

A hypoparathyroidism in the mother will set up a train of deficiency syndromes in the child such as rickets; it will also set up a train of nervous symptoms in the child which will, perhaps, mar its future life. Undoubtedly the convulsions which are so common in rickety children are due to a hypoparathyroidism which sets up a hypocalcemia.

A hypothymic state in the mother will set up in the fetus a train of deficiency syndromes such as delayed dentition and an irregularity in the placement of the teeth in the jawline. A hypothymic condition causes a loss of phosphorus to the bones including the teeth.

Rickets is surely a deficiency disease but not due to diet but principally to a deficiency of the endocrine glands which control the retention of calcium salts in the body.

Since Bretonneau's time (1778-1862) codliver oil has been used extensively in rickets as a cure, first in France and then universally. I believe the results from its use are probably due to its iodine content which activates the thyroid to a more normal action. The fat soluble vitamine A it contains may exert a stimulating force on the endocrine glands which are the lime binders of the body. Phosphorus added to codliver oil enhances its activity.

The latest treatment of rickets advocated by many recently is the use of the x ray, the violet ray, the quartz lamp and sunshine. Beneficial results are frequently reported.

A peculiar fact is that all these rays are direct stimulants to the endocrine glands and perhaps that is the reason why benefits are derived from their use. The rays cause considerable hypertrophy of the glands thus treated which is shown microscopically to be a true hyperplasia of the parenchymatous tissue. The rays also raise, by their stimulation of the glands, the blood calcium.

Besides a diet of fresh vegetables, hygienic conditions and fresh air, I use a very reasonable endocrine treatment and get good results in rickets by giving a combination of the parathyroids with thyroid and calcium lactate. Calcium is more readily absorbed when parathyroid is added to the combination.

It is suggested that if the combination mentioned above is used in all hypoendocrine states found in the prenatal period we will not find so many cases of rickets in the baby later and the baby's teeth will be less likely to decay rapidly.

To counteract the secondary anemia so frequently found in rickets, I give a combination of red bone marrow and spleen, two and a half grains of each three times a day.

Endocrinology of the teeth is slowly being worked out by many investigators and later, I have no doubt, it will be as an open book. I believe the time ripe for the dentist to give more heed to the endocrine glands in their relation to the teeth for I am positive that endocrinology will help us in preventive dentistry.

140 The Fenway.

Report of a Series of Hypertrophied Thyroids Treated With Radium*

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The treatment of this series of cases was started in 1923 and announced in the 1924 bulletin of the Otolaryngological Clinics of the Beth Israel Hospital in New York City. Since then almost two years have elapsed allowing sufficient time for their observation to warrant a fair report.

A goitre or thyroid enlargement is usually a simple parenchymatous hypertrophy, occurring mostly in young adults. In such cases there is usually a uniform enlargement of the gland which develops gradually and without pain or other symptoms. Its first indication is seen in the increasing size of the neck and tightness of the collar. If it still continues growing, dyspnea results from pressure upon the trachea.

There may be little or no goitre showing in the neck, yet an x ray of the thorax will reveal an intrathoracic goitre pressing on the trachea. Such a condition may account for a shortness of breath—dyspnea—and sometimes is mistaken for asthma.

This enlargement of the thyroid gland is most likely a true hypertrophy which occurs in response to a demand for an increased supply of internal secretion. In most cases where hypertrophy starts, it continues increasing in size beyond its physiological limit and becomes pathological. In these cases early medical treatment is often effective. This consists in satisfying the demand for increased thyroidal secretion from an external source, so that the gland is able to rest, and undergoes diminution in size. Where this condition is neglected and becomes longstanding fibrous tissue develops, and medical treatment has little or any effect at all. In such cases the application of large doses of radium has shown encouraging results. In cases of goitre, where the ordinary treatment has proved useless, and where operations are advisable, radium should be tried.

*From the Otolaryngological Department of Beth Israel Hospital.

In goitre containing cysts or adenomata, radium has been found to be less effective. Some diminution in size may follow its application as a result of atrophic changes in the gland substance itself. In such cases the operation for the removal of the cystic or adenomatous thyroid is simplified by the previous application of radium. Where the thyroid is very large, occurring in middle age or in very elderly persons, and usually of the cystic variety, radium is practically useless. Operation here is advised where the enlargement is a repulsive deformity, and then only when no hypothyroidism exists.

In exophthalmic goitre there is usually present a colloid degeneration of the thyroid gland. This produces a group of symptoms including tachycardia, palpitation, nervousness, tremor, loss of weight, and general weakness. These symptoms resemble those coming on after feeding an excessive amount of thyroid gland, and are brought on by an overproduction of thyroid secretion, which is thrown into the blood stream. Medical treatment is directed for relief of symptoms and is usually regarded as having no effect on the duration of the disease. X ray treatment has been discarded as it is too destructive, and liable to result in hypothyroidism. Operative procedure has been discouraging. Radiotherapy in this condition has been satisfactory.

The radium is applied to the neck over the thyroid screened first by a brass container, and then by a wooden block about six centimetres in depth. A total exposure of 250 millicurie hours is obtained by applying one hundred milligrams of radium for two and a half hours.

This application is repeated in two weeks, and the subsequent treatments four weeks apart. The number of applications given depends upon the basal metabolism and the clinical signs. Where the thyroid

Fig. 1.—Case II Fig. 2.—Case IV Fig. 3.—Case V Fig 4.—Case VI

No.	Name	Age	Sex	Variety	Duration	Symptoms	Basal Metabolism	No. of Treatments	Dose	Results
1	E. H.	37	F	Parenchymatous	3 yrs.	Thyroid size of an egg. Urine and Wassermann negative. No exophthalmic symptoms.	+8	8	100 mg	Marked improvement. Thyroid much smaller.
2	R. G.	32	F	Cystic	1 yr.	Enlarged neck, painful swallowing.	+26	4	100 mg	No result apparent.
3	I. A.	19	F	Exophthalmic	11 yrs.	Slight exophthalmic signs. Pulse 96, eyes somewhat bulging; marked tremor at fingers. Nervous.	+21	5	100 mg	Marked improvement. Neck much smaller. Pulse 86. Not so nervous.
4.	S. B.	41	F	Parenchymatous	12 yrs.	Blood pressure 200 / 90. Pressure on trachea, choking sensation.	+ 8	8	175 mg	All pressure symptoms on trachea gone. Neck much smaller. Both lateral lobes of thyroid markedly diminished in size.
5	I. W.	26	F	Cystic	6 mos.	Pulse 80	+ 9	4	100 mg	No result apparent.
6	L. S.	34	F	Exophthalmic	8 yrs.	Thyroid size of orange, getting larger. Nervous. Eyes bulging slightly. Face flushed. Marked tremor of fingers. Pulse 96.	+ 9	4	200 mg	Slight improvement in exophthalmic signs but none in size of thyroid.
7	M. K.	14	F	Parenchymatous	7 mos.	Not yet menstruating. Thyroid enlarged. No exophthalmic signs.	+6	8	(3- 50 mg (2- 75 mg (3-100 mg	Excellent result. Thyroid just visible.
8	A. W.	27	F	Exophthalmic	10 mos.	Neck enlarged, left eye bulging. Pulse 90, nervous. Marked tremor of fingers.	+4		100 mg	Exophthalmus lessened. Left eye does not bulge as much. Nervousness markedly lessened.
9	J. R.	37	F	Parenchymatous	6 wks.	Frequent pain in throat. Neck continues to swell. No exophthalmic symptoms. Pulse 72.	+2	4	200 mg	Thyroid slightly smaller.
10	S. E.	45	F	Exophthalmic	1 yr.	Neck continues to swell. Pulse 120, Von Graefe sign present. Nervousness. Tremor.	+56	4	200 mg	Feels better. Nervousness improved. Size of thyroid same.
11	D. H.	25	F	Exophthalmic	4 yrs.	Lost 30 lbs. in two years. Nervous and dizzy. Sleepless. Eyes bulging. Pulse 120. Marked tremor at fingers.	+63	7	175 mg	Good result. Eyes do not appear to be as prominent. Feels much better. Nervousness markedly lessened.
12	P. L.	25	F	Cystic	4 mos.	Nervous. Right side of neck enlarged.	+8	4	(1-30 mg (1-40 mg (1-60 mg (1-75 mg	No improvement noted. Dose too small. Did not return for treatment.
13	R. B.	36	F	Cystic	2 yrs.	Very nervous and easily excited. Repeated flushes and chills.	+8	7	100 mg	Symptoms improved but did not return for further treatment. Thyroid not smaller.
14	E. W.	17	F	Adenomatous	3 yrs.	Neck enlarging past three years. Otherwise no other complaint.	+4	7	100 mg	No improvement noted. Neck same size.
15	S. S.	36	F	Exophthalmic	4 yrs.	Lost 35 lbs. in past four years. Pulse 96, rises rapidly. Suffers headaches and is nervous. Eyes bulging slightly.	+18	2	(50 mg* (100 mg	*Size of thyroid same. Feels greatly improved. Headaches gone. Not nervous. Pulse slower. Did not return for further treatment.
16	Y. A.	21	F	Parenchymatous	2 mos.	Left lobe much enlarged. Right only slightly enlarged.		3	100 mg	Marked improvement. Neck almost normal size. Feels much better. Thyroid enlargement practically gone.
17	F. B.	45	F	Adenomatous	6 yrs.	Operated upon December, 1923, but swelling returned. Has large horizontal scar over neck from incision. Three distinct masses visible and are rather hard.	+31	4	200 mg	No result apparent. Advised reoperation.
18	E. K.	47	F	Cystic	18 yrs.	For past three years neck swelling continuously.	+6	4	100 mg	No apparent improvement.
19	S. W.	27	F	Adenomatous	5 mos.	Neck gradually enlarging.	+9	1	75 mg	No results noted. Did not return for further treatment.
20	R. S.	16	F	Parenchymatous	1 yr.	Thyroid enlarged especially during menstruation.	+7	3	100 mg	Marked improvement. Neck half inch smaller. Did not return for further treatment.
21	S. S.	49	F	Exophthalmic	2 yrs.	Neck enlarging for past two years. Very nervous. Frequent headache and flushes. Marked tremor in fingers. Loss of appetite. Pulse 140 Myocarditis.	+19	7	100 mg	Marked improvement in exophthalmic symptoms. No change in size of thyroid.
22	M. P.	14	F	Parenchymatous	1 yr.	Neck began to swell after removal of tonsils. Centre lobe much enlarged. No exophthalmic signs.		8	100 mg	Marked improvement. Goitre just visible.
23	G. P.	28	F	Exophthalmic	5 yrs.	Cystic mass size of an egg. Right side more tender. Slight exophthalmus. Pulse 120, tremor. Choking sensation present.	+27	5	150 mg	Marked improvement. Tremor gone. Pulse and choking sensation relieved. Exophthalmus improved.
24	I. S.	46	F	Adenomatous	2 yrs.	Large neck. Centre lobe especially enlarged. Nervous and apprehensive. Lost 40 lbs. in past three months.		4	100 mg	No improvement noted.
25	B. R.	34	F	Cystic	9 yrs.	Very large thyroid especially on right side. Slight exophthalmus. Eyes alert, twitching. Pulse 102.	+9	3	100 mg	No improvement noted.

*Was operated upon by Dr. Pool at New York Hospital on February, 1924, but returned to clinic with recurrence of symptoms and return of the goitre.

is greatly enlarged, or where the exophthalmic symptoms are marked, a larger dose of radium is used. This consists in applying two hundred milligrams for two and a half hours, thereby obtaining five hundred millicurie hours.

CONCLUSIONS

My conclusions, derived from the tabulated cases, do not warrant enthusiasm for this method of goitre treatment. The only cases really benefited by the radium were those of exophthalmic goitre. The majority of these improved after the first application. It was gratifying to see the patient with exophthalmic symptoms return in a calm state, nervousness lessened, pulse quiet and slower, with the marked apprehensive look in the eyes gone. In several cases of functional thyroid enlargement in young girls radium was not applied because we obtained good results with the administration of iodine. These cases are not included in our report.

44 WEST SEVENTY-FOURTH STREET.

Observations on the Effect of Radium on the Parathyroids*

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A large amount of experimental work has been done recently on the treatment of diseased conditions of the thyroid gland with the x ray and radium. However, a review of the literature on this subject reveals no observations concerning the effect of this therapy on the parathyroids.[1] With this viewpoint, therefore, I assembled some data while working in the Otorhinolaryngological Clinic of Beth Israel Hospital, New York.

The parathyroid glands, usually four in number, are small brown bodies, situated in the meshes of the loose connective tissue forming the outer capsule of the thyroid.

It is the present consensus of opinion that the parathyroids function by elaborating an internal secretion which regulates calcium metabolism (2, 3). The symptoms arising from removal of the glands can be attributed to a condition of hypersensitiveness of the peripheral and central nervous systems, due to a decrease in the calcium concentration of the blood (2). This fact was demonstrated conclusively by Salvesen, who, in an experiment on parathyroidectomized dogs, was able to ward off the occurrence of tetany by the injection of calcium (3).

The character and severity of the manifestations of parathyroid insufficiency vary, according to the amount of parathyroid tissue extirpated. When the removal has been complete, the result is rapid respiration, spasmodic contractions, convulsions, and death (4). In cases where the parathyroidectomy has been partial, the following symptoms have been noted—headache, general weakness, stiffness and tingling in the hands and feet (5), and, finally, the typical carpopedal spasm of tetany (6). Accompanying these, there is invariably a drop in the calcium concentration of the blood (7).

In our clinic, we use the following method in radiating the thyroid cases. The radium is placed in brass containers, which are then wrapped in pure gum rubber and, by means of adhesive tape, are fastened to wooden blocks one inch in thickness. One or more of these blocks are applied securely to the skin overlying the thyroid in such a way that the radium will be on the outside of the blocks. They are left in place from one to three hours, the usual dose for each treatment being two hundred mgs. of radium applied for three hours. Because of the close anatomical relationship between the thyroid and parathyroid glands it is obvious that during these treatments the parathyroids are radiated as well.

TABLE I

Case	*Blood calcium* (mgs. per 1000 c.c.) Before treatment	After treatment	*Treatment* (mg. hours or dose times hours of application.
1.....	80	100	600
2.....	85	85	800
3.....	105	115	1,550
4.....	85	93	1,200
5.....	105	93	1,200
6.....	80	70	1,200
7.....	100	82	1,200
8.....	98	98	600
Average.....	92	92	

TABLE II

Case	*Treatment* (mg. hours)	*Blood calcium after treatment.* (mgs. per 1000 c.c)
9.....	250	95
10.....	300	110
11.....	600	80
12.....	300	85
13.....	700	70
14.....	1,050	85
15.....	600	100
16.....	600	85
17.....	1,100	70
Average		86.6

From the series of thyroid cases treated at our clinic, a study in regard to alterations in parathyroid function was made on seventeen patients, who, by the way, represented various types of thyroid diseases. Following irradiation, the patients were questioned closely as to the development of such symptoms as headache, general malaise, stiffness, tingling or actual pains in the extremities (6). None of them had experienced any. Furthermore, the examination of these patients for carpopedal spasm, Chvostek's sign and other evidence of heightened irritability of the nervous system was uniformly negative.

A study of their blood calcium was also made.

*From the Otolaryngological Department of Beth Israel Hospital.

[1]Frey and Kriser have radiated the parathyroids in treating cases of otosclerosis, which they believe is due to a parathyroid insufficiency. While they comment favorably on this method of treatment, they give no report on the immediate effect of the radium on the parathyroids (1).

The method used for the determination of the calcium concentration of the blood was that described by Kahn and Hadjopoulos (8). In this procedure the serum is employed and the normal reading varies from eighty-five to ninety-five mgs. per thousand c.c.

On eight patients in the series, an examination of the blood was made before and after treatment (see Table I). We see that in three cases, the calcium content increased, in three it decreased, and in two it remained at the same figure. The averages of the two groups were identical.

These results were supplemented by the findings in the other nine cases (see Table II). While in this group we have no preliminary examinations to act as checks, we find that after irradiation, no patient had a blood calcium below seventy mgs. per thousand c.c. of serum, and that the average was 86.6 mgs. per thousand c.c., which is well within the limits of normal.

From these observations, the conclusion can be drawn that radium in the dose used, while exerting a therapeutic influence on the size and function of the thyroid gland, does not affect the parathyroids in any appreciable manner.

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214 EAST SEVENTEENTH STREET.

Pituitary Headache

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The recent article by Dr. Harrower on headaches relieved by pituitary extract (1) recalled to my memory the following cases, which may be of interest. In each case the preparation employed was, at first, liquid extract, and when the correct dose had been established, tablet preparation of the whole gland were used.

CASE I.—Mrs. B., aged forty-five, first seen early in 1916, complained of headaches increasing in frequency and severity of recent years. A degree of thickening around the neck and shoulders decided me to order thyroid in minute doses; this seemed to increase the headaches. The periods had been irregular and profuse and were unaffected by the thyroid medication which was continued for two months. A trial of pituitary, whole gland, was tentatively begun. Immediately the headaches began to improve; at the same time the thickening of the body, especially of the lower parts, decreased, and the periods became more normal. Pituitary was continued for nearly two years, as the patient found that if ever she omitted it for over a fortnight, the headaches tended to return and to become more violent during the time of the period. Some two years later a small fibroid was discovered and I brought about an artificial menopause by x ray. Pituitary medication has not been required since that time.

CASE II.—A nurse, aged forty-four, first seen in July, 1924, complaining of increasing fatigue and lack of energy during the preceding six months. She had also developed a constant headache, and at times nausea was a troublesome symptom. Rest and a holiday for six weeks had brought about no alleviation of her symptoms. When I first saw her the blood pressure was 165/90; she looked worn out; but the chief complaint was perpetual headache, aggravated at the time of the menstrual period. There were present the thickening round the neck and shoulders, which is so frequent with athyroidism, and also the thickened masses round the lower part of the chest, abdomen and thighs, and the blueness of the breasts and upper arms which is so often associated with deficient pituitary action. She was put on one grain of thyroid and gradually worked up to six grains of pituitary daily. When next seen in October she was another being, slimmer and without headache or nausea. She had observed the symptoms closely and was certain that when she tried to leave off the pituitary the headache tended to return.

She carried on with her work during the winter and gradually left off taking the tablets. In May, 1925, nausea and headaches began to return, and she decided to call on me again. On her resuming the whole pituitary gland treatment the threatened recurrence of her symptoms was at once arrested.

CASE III.—A probationer, aged thirty-three, seen on two occasions in 1921, of obese appearance, complained of severe headaches during the monthly periods. More relief was obtained from tablets of pituitary extract than from any other form of medication. I had not the opportunity of following up or going thoroughly into her case.

I have had several other cases during the past two years, in which headache has been aided by pituitary medication. In these cases, however, as other treatment was being administered concurrently, the relief obtained cannot be entirely ascribed to the use of pituitary extract.

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7 DEVONSHIRE PLACE.

Therapeutic Uses of Parathyroid Gland

With Some Introductory Notes on Its Anatomy and Supposed Function

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The Swedish original (1) of Ivar Sandström's great work announcing the discovery of the parathyroids is hard to find in New York. The only available account in the library of the New York Academy of Medicine is an abstract in Schmidt's *Jahrbücher* for the same year.

But from this one can easily see that Sandström's work was thorough. He knew exactly what he was about. His comparative studies showed that these bodies are also present in the dog, horse, cat, bullock, and rabbit. In the rabbit, however, he missed the internal pair of glands. These, as A. Kohn (2) afterwards noted, are embedded in the thyroid. Sandström's microscopic studies were also accurate and extensive. He affirmed that the parathyroids are quite diverse structurally from the thyroids, and none of the speculations of later writers that these glands are capable of developing into thyroids has ever been confirmed. He noted that Remak, in 1858, and Virchow, also, had undoubtedly noticed these bodies, and speculated as to their function. He named the glands *Glandulæ parathyreoideæ*. Though German usage also justifies *Epithelkoerperchen* and *Nebenschildruesen,* and Verdun (3) thought that *branchial glands* would be embryologically more appropriate, Sandström's name still survives; and it seems only fair that it should.

ANATOMY

I can only note briefly that in man the glands are usually four in number, two on a side, fitting into notches on the rear edge of each thyroid lobe, and fed by twigs of the upper and lower thyroid arteries. But there is no magic in the positions mentioned or the number four. There may be three, five, six, or eight, and the positions are often anomalous. Fortunately for the incautious surgical operator there are also a number of minute or even microscopic accessory glandules (4) scattered through the tissues of the neck near by. If there be time enough, these are sometimes capable of notable hypertrophy to meet a postoperative demand.

Special students of the anatomy, comparative anatomy, and embryology of the glands, will find extensive bibliographies in papers by Bergstrand (5), Boothby (6), and in the exhaustive monograph by Thompson (7). The last named work contains an almost complete list of authors and papers to the date of publication. Numerous interesting special studies since 1920 will be noted later.

For laboratory parathyroid work the most useful animal is the dog. The parathyroids in this animal are usually four in number, two on a side, attached almost anywhere to the capsule of the corresponding thyroid lobe; and they do not require to be removed as such; a double thyroidectomy is all that is necessary. The accessory thyroids in dogs are so numerous that this operation in a large majority of instances has no essential or lasting effect on thyroid chemistry. The immediate acute symptoms are all due to parathyroid deficiency.

One will not thus get one hundred per cent. of successes. A small percentage of all dogs have minute accessory parathyroids in undiscoverable places. These accessory glands rapidly respond to the postoperative demand, and such dogs remain well, or sicken only temporarily, and later on recover all their previous health, appetite and spirits. But in the majority of instances the untreated animal dies with the typical symptoms of tetany.

If rabbits are to be used, the outer glands are easily removed from their position on the carotid sheath, and if the lower outer third of each lateral lobe of the thyroid be also cut away, the inner glands will be found (under the microscope) embedded in the tissue removed in about eighty or ninety per cent. of the animals operated on. The main trouble with rabbits is the dangerous proximity of the recurrent laryngeal nerve. If this be cut, the animal dies of asphyxia due to occlusive paralysis of the vocal cords.

PHYSIOLOGY

When the glands are all removed from a laboratory animal in the way already described, he recovers from the anesthetic promptly, eats, drinks, and plays for a half day or more, and then becomes characteristically ill. The most notable sign is increased tone of the voluntary muscles. There are fine muscular tremors, and a perceptible increase in muscular rigidity. Voluntary control of the muscular movements is interfered with. Dogs stagger. Rabbits hop a few times, and fall over, suggesting the "festination" of the Parkinson patient. Cats sidle along, every now and then lifting and shaking one foot (wet foot). Rabbits shiver as though with cold. At this stage there may be intermittent convulsions. Young animals are likely to die in a convulsion. Salivation may be marked. The heart beats with the speed of a riveting tool. The breathing is enormously hurried. Dogs are said to have trismus.

There are no reliable reports on temperature. Fever has been reported. Albuminuria is not marked. Hypoglycemia was reported at one time but has been denied by later writers, who say that it does not appear till tetany sets in, when it may be readily explained as due to the excessive muscular activity (8). The animal in later stages lies miserable, emaciated, loathing food, finally stuporous, but often trembling to the end. Death may be early and sudden (convulsions?), or in more favorable instances may be postponed for some weeks. The occasional recoveries may be explained on the principle already mentioned (accessory glands).

These experiments have been repeated in almost every research laboratory in the world. They have been everywhere confirmed except (a good while ago) by Vincent and Jolly, who probably (they used cats) encountered a series of animals with an unusual

supply of accessory glands, and quite recently by L. R. Dragstedt (9). Dragstedt stated that by careful nursing and a milk diet he could get his animals back to normal again, and he concludes that "the parathyroids are not essential to life." Salvesen (10) with two or three dogs asserts that he had the same experience, but he distinctly affirms that the survival was due to the calcium in the milk diet, and that the tetany reappeared as soon as the milk was replaced by a food not containing calcium. Dragstedt's animals in many instances died with the usual symptoms. His protocols are entirely unconvincing. Shapiro and Jaffe (11) conclude that careful nursing and a milk diet merely tide the surviving subjects over the critical period needed for the development of accessory tissue.

In view of all the evidence there is no reasonable doubt that the parathyroids are essential to life.

CHEMISTRY

The physiological chemistry is largely controversial. It can be only glanced at.

In a little known Rumanian medical journal (12) two alert Rumanian scientists, C. Parhon and C. Urechie, published accounts indicating beyond a doubt that intraperitoneal injections of calcium chloride (one half of one per cent.) into sick dogs relieved the tetany. Twenty dogs were operated on, and controls were carefully made at all points. In August, 1907, their discovery was read before the French Congress of Alienists and Neurologists (13).

MacCallum and Voegtlin made the same announcement independently the following year (14). They used intravenous injections. Berkeley and Beebe (15) confirmed the effects of calcium on such dogs, but made the tentative suggestion that such action is pharmacological, and that the spasms perhaps more likely arise from toxic substances in the blood which are normally detoxicated by parathyroid secretion.

A long series of studies has followed. Some authors have found the blood calcium increased and some found it diminished after parathyroidectomy. Some authors have attempted to distinguish between ionized and bound calcium, claiming that only the ionized calcium is diminished. Noël Paton and coworkers (16), at Glasgow, concurred with Berkeley and Beebe in the opinion that calcium had probably only a drug effect. From an immensely long and laborious series of researches the Glasgow students concluded that parathyroid tetany is due to the postoperative appearance in the blood of certain toxic bases, guanidine and methyl guanidine, both of which they stated that they had identified. H. W. C. Vines (17) declared that the gland has two secretions, one of which controls calcium metabolism, and one detoxicates guanidine. I. Greenwald (18) affirms on the basis of a new series of interesting experiments that the chemical methods of Paton and his associates were insufficient for the identification of guanidine in the blood and urine of their experimental animals, and that there is no toxic substance in either blood or urine in tetany—only a calcium deficiency. Professor MacCallum (19) and Professor Paton (20) have each reviewed the recent literature, and respectively reaffirmed the conclusions they previously arrived at. Collip and Clark (21) could not revive with their new parathyroid extract a dog which had received a fatal dose of guanidine.

In critical comment on these assertions one must remark that the whole question of calcium metabolism is in great confusion. The methods of quantitative analysis at present in use are only approximative. It is generally supposed that the quantity of calcium in the blood is normally only ten or twelve mg. to the hundred c. c. of blood. When, as is usually the case, only minute amounts of blood (one or two c. c.) are used in the analyses made, the experimental error is enormously multiplied in the final result. Before the hardheaded clinical practitioner draws any conclusions on the subject, he will ask for many more facts and many more confirmations of supposed facts than are now available. The calcium content in a great many diseases has never been studied at all, so far as I know; and in diabetic acidosis, in cancer, suppurative conditions and uremia, researches so far made seem to indicate that a marked lowering of the calcium content of the blood is unassociated with any signs of tetany whatever.

The same objections must be raised in the matter of guanidine poisoning. The subject requires far more research, and far more unanimity of conclusion than has been so far attained.

The parathyroid question is further complicated by a large number of latter day studies on tetany in its relation to alkalosis of the blood. The literature is pretty fully given in the recent paper by I. Greenwald (22). The various observations so far published are interesting, but as usual the conclusions arrived at are in many instances but ill justified by the protocols.

PARATHYROID THERAPEUTICS

The present status of the chemical theory is confusing, and offers but little satisfactory help in the identification of possible parathyroid diseases. The clinical signs of postoperative tetany are of more value, and it is upon these that we must still mostly rely.

Nothing is so far clinically known of hyperparathyroidism. Nothing is known of dysparathyroidism. Of hypoparathyroidism, however, there is one certain condition in man, tetany following total thyroidectomy, and two conjectural conditions, idiopathic tetany, and certain types of paralysis agitans.

The convulsive symptoms of parathyroid tetany have led various authors to suppose that epilepsy, eclampsia gravidarum, and eclampsia neonatorum are parathyroid conditions. MacCallum and Vassale tentatively suggested epilepsy twenty years ago. The notion died out entirely, so far as I know, till A. Bisgaard (23) and Bisgaard and Hendricksen (24) revived it. They based their conclusions upon the rather slender claim that the dysregulation of the H ion concentration of the blood in postoperative tetany is also to be observed in epilepsy.

The supposed relation of the parathyroids to calcium metabolism led Vines (*loc. cit.*) to examine the calcium of the blood of a number of patients with various suppurative diseases. He found the calcium reduced in patients with varicose and other ulcers, and claimed that parathyroid was curative. H. H. Scott (25) found the ionic calcium of the blood diminished in the dangerous and obstinate disease, tropical sprue. Giving calcium caused improvement, and giving calcium and parathyroid caused rapid improvement, with apparent cure. In Manson's *Tropi-*

cal Diseases (7th ed.) is to be found the curious note in this connection that an irregular practitioner in Shanghai in former years got up quite a reputation for the treatment of this disease with a secret remedy. The drug was supposed to be some form of lime, probably powdered cuttlefish bone.

Getting still further away from any clinical or laboratory indications, various medical writers have reported parathyroid as curative of arthritis deformans, Graves's disease, paroxysmal tachycardia, and a curious list of other rather miscellaneous conditions. Of these one must remark that the cases have been imperfectly reported, that no note was made of other remedies used, and that the number of socalled cured cases was far too small to exclude the coincident beneficent working of the *vis medicatrix naturæ*.

Returning therefore to firmer ground, I will comment at more length on the first three diseases mentioned.

POSTOPERATIVE TETANY

Surgical tetany is a condition sometimes following both partial and total surgical excision of the thyroid gland. It may result from, a, accidental removal of the parathyroids; b, operative damage of their blood supply; c, postoperative suppuration; d, late cicatricial strangulation. This accident is still occurring every now and then in the best regulated hospitals. In Germany it is admitted to be on the increase, and is attributed (M. and K. Grasmann) to the current tendency to ligation of too many of the nutrient vessels. In America it is hard to get any details; surgeons do not publish them! The condition is, however, always one to be borne in mind, for the results run all the way from mild evanescent tetany disappearing for good and all in a few days, to a dreadful acute tetanoid state, or even tetanic convulsions, followed by speedy death.

Treatment.—Prevention is the rational treatment. If the rules for operation laid down very plainly in the modern textbooks of surgery are carefully followed by the surgeon, the accident will never occur. When the symptoms have unmistakably developed, the treatment consists of intravenous calcium injections from time to time, and the administration at proper intervals of oral and subcutaneous doses of a standardized preparation of parathyroid. The principle is that these remedies may possibly keep the patient alive long enough for the development of accessory tissue.

Grafting a gland is a forlorn hope, so rarely satisfactory that one may well doubt whether in the few successes that have been reported the diagnosis was correct.

IDIOPATHIC TETANY

This is a disease about which much has been written, and little is actually known. Many experienced practitioners in American cities have never seen an adult case, though it is more common at all ages on the continent of Europe. In making the diagnosis the "obstetric hand" (Trousseau's sign) is mainly relied on both in adults and children; but this sign often appears temporarily in a miscellaneous multitude of evidently unrelated diseases, and is a poor dependence. I once saw it as a persistent hysterical symptom in a young woman otherwise in superb health.

Many writers try to differentiate infantile tetany and "spasmophilia" (whatever that may be) from the ordinary idiopathic tetany of adults. The blood in many of the infantile cases has been found deficient in calcium, and on the continent the profession generally consider symptomatic tetany at any age as a hypoparathyroidism. The suggestion originated with Jeandelise, so far as I am informed, and dates from early in this century. One may accept it as a working hypothesis of the causation of a certain proportion of the cases.

TREATMENT

Treatment theoretically consists in giving calcium and parathyroid, and in the relief or removal of complications. Complications in babies are diarrhea, rickets, and malnutrition; and in adults, pregnancy, dilation of the stomach, and industrial poisonings of various kinds. Each of these conditions is to be cared for in the proper way, if the tetany is to be permanently abolished.

PARALYSIS AGITANS

The possible connection of this disease, or of some forms of it, with chronic deficiency of the parathyroid glands was suggested by Lundborg, of Stockholm, in 1904, and by the writer independently in 1905. As far ago as 1886 Victor Horsley hinted at it after observing the tremors in some of his thyroidectomized animals; but he knew nothing of the parathyroids, and supposed the thyroids to be at fault.

In another place (26) I have enumerated at length the considerations that lend some probability to the connection between the parathyroids and Parkinson's disease. The symptoms are strikingly similar; the disease has been sometimes associated with Graves's disease, and with myxedema, where one might not unreasonably surmise that the circulation of the parathyroids has been damaged by the adjacent thyroid trouble; and finally, in hundreds of cases of Parkinson's disease in the care of physicians all over the world, a majority of the patients have been benefited by parathyroid medication, when real parathyroid gland was given.

Many of the patients have been remarkably relieved. There is hope of some benefit in all patients except those afflicted with the agitans syndrome following severe cases of influenza (epidemic encephalitis?). Here, unfortunately, even the largest and most carefully administered doses are entirely without effect.

BEDSIDE DETAILS

Extracts of parathyroid.—Berkeley and Beebe (*loc. cit.*) found that acetic precipitates of alkaline parathyroid solutions were active in relieving canine tetany (fifteen minutes to an hour or so). This extract is killed by boiling, and slightly damaged by artificial digestion. J. B. Collip and coworkers (27) announce that they have produced a very active extract by boiling the minced glands in dilute hydrochloric acid, and that they can not only relieve canine tetany by injecting this extract, but can by repeated injections cause a hypercalcemia (fourteen mg. to the one hundred c. c. of serum) in dogs and that such dogs may even finally die. It does not, however, as yet appear that the dogs die from the hypercalcemia.

Dr. Collip's extract is called parathormone. Though there are as yet no announcements (that I

know of) identifying this extract as a definite chemical entity, its discovery evidently marks an important advance in our chemical knowledge. Dr. Collip seems at present to think that it belongs to the proteins.

The Berkeley-Beebe extract I am accustomed to give in doses of one fiftieth grain several times a day. It may be given by mouth, by hypodermic, or in both ways. It is now to be had of several New York wholesalers. To the hypodermic there is no local reaction.

CONTRAINDICATIONS

For this preparation there are virtually no contraindications. Among the hundreds of patients with paralysis agitans in the care of myself or of medical friends in the last few years I have never had but one patient who could not take it. Dr. Parcher, of Saugus, Mass., wrote me of a lady in his care who appeared to grow hysterical after two or three doses, and refused to go on with the treatment. One English writer has recently reported diarrhea in children after the use of a commercial extract (maker's name not stated). This does not sound alarming. It is possible, however, that Dr. Collip's preparation may prove much more potent, and that its administration may require more circumspection.

The ordinary commercial extracts made by American dealers are uncertain, and as far as my experience goes, mostly inert. The extract used in England by Dr. Vines was given in doses of one tenth grain.

In conclusion, one may observe that while parathyroid may occasionally save a life in surgical tetany, it is of secondary consequence in idiopathic tetany, and that its great service so far at the bedside has been in the relief of the symptoms of paralysis agitans. Whether its action in this disease be specific substitutive gland therapy, or only a symptomatic influence, the clinical facts remain the same.

A physiologically tested preparation must be used.

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The author's references will appear in his reprints.

Insulin Practically Applied in the Treatment of Diabetes Mellitus

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In the past year and a half we have treated ninety cases of diabetes mellitus in the Third Medical Division of Bellevue Hospital. Our mortality was ten cases or eleven per cent. Four of these patients died of bronchopneumonia, two of hemorrhage into the cerebrum, one of acute miliary tuberculosis, one of postoperative shock, one of diabetic coma, and one of hypoglycemic shock. The case of diabetic coma was complicated by a lung abscess and high temperature. The patient had been given 250 units of insulin in a period of thirty-six hours with no result; the blood sugar before treatment was 420 mgms. per one hundred c. c. of blood and fifteen minutes before death was still 400 mgms. The deaths from diabetic coma were therefore about one per cent.

In order to treat rationally a patient with diabetes mellitus one must be familiar with the underlying metabolic changes. In normal metabolism a relation exists between the fatty acids (ketogenic substance) and carbohydrate (antiketogenic substance), so that two to three gms. of the former are burned always in conjunction with at least one gm. of the latter. Failure of the body to utilize this proportional amount of carbohydrate while continuing to burn fat in normal or more than normal amount, results in incomplete combustion of fat, with the production of the socalled acetone bodies. The appearance of these substances in the urine (acetone, diacetic acid, and beta oxybutyric acid) is Nature's signal of an impending intoxication and treatment therefore must be immediately directed toward the prevention of their formation, before their accumulation has lowered the alkali reserve of the blood to a dangerous degree.

The second consideration in the treatment is to render the urine sugar free and reduce the blood sugar to normal.

The third, is to increase the patient's tolerance so that his urine is sugar free and his blood sugar normal, on a diet sufficient in caloric value and with a proper proportion of fat protein and carbohydrate to carry on normal metabolism.

The cases of diabetes which we have been called upon to treat have ranged from mild ketosis up to impending coma and actual coma. In the mild cases, treatment need not be directed toward the acidosis, for it will be found during the process of eliminating sugar from the urine and reducing the blood sugar to normal that the slight evidence of intoxication present will disappear within three or four days.

In the cases of impending coma, however, treatment must be prompt and drastic and directed solely toward the acidosis without any regard to the degree of hyperglycemia or the amount of sugar excreted. Such cases are characterized by drowsiness, dry, red, fissured tongue, acetone odor to the breath, flushed cheeks, air hunger, subnormal temperature, mental confusion or delirium.

First, the temperature is brought up to normal and maintained there by external heat and a high, hot colonic irrigation. Then a hypodermoclysis of one thousand c. c. of normal saline is given, in one dose or divided doses depending upon the condition of the heart and circulation. The patient is now in a suitable state for the beginning of intensive insulin treatment.

During active treatment with large doses of insulin, urine examinations are of much greater value than blood examinations, and this for three reasons: first, the blood sugar estimations vary with the concentration of the blood and in the early stages of the treatment when the patient is dehydrated, are not to be relied upon, while the clinical aspect of the patient is a sure indication of a lowered alkali reserve in the

blood: second, the disappearance of acetone from the urine is good evidence that the patient is out of immediate danger; it is then that the blood sugar and carbon dioxide estimations do become important factors in the regulation of the diet and the dosage of insulin to be prescribed thereafter: third, blood sugar and carbon dioxide estimations entail invariably some loss of valuable time when immediate treatment is urgent. In the hospital, nevertheless, we do make a blood examination on admission, merely for record and future reference, but insulin treatment is begun without waiting for the report.

INITIAL DOSE OF INSULIN

Having now increased the patient's resistance by raising and maintaining the body temperature at normal and giving fluid by hypodermoclysis, a urine specimen, drawn by catheter (making sure to empty the bladder completely) is examined for acetone and quantitatively for sugar. Then forty units of insulin are given intravenously with forty gms. of glucose in a ten per cent. solution by mouth. The carbohydrate is given as a safety procedure. The purpose of this first dose of insulin and carbohydrate is to create a large carbohydrate flame in which to burn the fat metabolized at that time and so prevent the further formation of ketone bodies.

The insulin will continue to have its effect for four to six hours. During this period the patient is watched for signs of increasing toxemia, for which heat, sodium bicarbonate and hot retention enemata are valuable; and for failing circulation for which digitalis and caffein are used. We have found that gamma strophanthin given intravenously is a rapid and effective circulatory stimulant. The dose is .005 mgm. per pound body weight given in two doses one hour apart.

At the end of this period of four hours the patient is again catheterized, making sure again that the bladder is completely emptied, and the urine obtained is examined for acetone and quantitatively for sugar.

Owing to the uncertainty of the exact amount of insulin required when treatment is begun we selected forty units for our initial dose rather than a larger amount. While this dose produced in most cases no change either in the urinary acetone or sugar, there was clinical improvement, and we felt it was adequate as an initial dose. Four hours after the initial dose forty units more of insulin were given, this time subcutaneously and forty gms. of glucose by mouth. For comatose patients the second dose of insulin was given intravenously. Noncooperating patients and patients in coma were given glucose by Murphy drip, five per cent. retention enema, using six ounces of water, or by stomach tube. Alkalies were not used.

After this second period of four hours the urine was again examined. In our series the acetone was invariably found to be greatly diminished, the sugar remaining about the same. The patient at this time having had eighty units of insulin in a period of eight hours begins to show signs of marked improvement. This is best seen in the diminution of air hunger and restlessness and the return of coherence.

Since there is no need to burn an amount of carbohydrate above that required for the complete oxidation of the fat metabolized, we found that ten units of insulin and ten grms. of glucose given every four hours were sufficient for a person weighing about sixty kilos (average weight). Our subsequent dosage of insulin varied somewhat with the patient's weight, but ten units every four hours were usually sufficient. This was continued for three to five doses when in practically all instances the urine became acetone free. If blood examinations are made during this period it will be found that the sugar remains about the same but that there is a steady increase in the alkaline reserve.

This procedure required, as a rule, about ninety to one hundred and fifty units of insulin and extended over a period of twelve to thirty-six hours.

SECOND STAGE OF TREATMENT

The patient is now out of immediate danger from coma and the second process in the treatment is begun, namely, the reduction of the blood sugar to normal and making the urine sugar free.

The patient is now put on a basal diet roughly computed as one gram of carbohydrate per kilo body weight, one gram of protein per kilo and two and one half grams of fat per kilo. Now enough insulin is given to metabolize the amount of carbohydrate in the diet plus the amount of carbohydrate excreted in the previous twenty-four hours. The latter figure must be determined before the patient has been put on a basal diet.

In deciding upon the amount of insulin to be used at this stage of the treatment, it is to be kept in mind that while in a case of coma one unit will metabolize approximately one half a gram of carbohydrate, in a moderately severe case it will metabolize one to two grams, and in the milder, three to five grams.

BASAL DIET

The patient is now on a basal diet eating equal amounts three times a day and receiving one third of the total daily dose of insulin twenty minutes before each meal. If the patient cannot chew solid food a suitable diet can be arranged with milk, cream and eggs. One quart of milk, one pint of cream (twenty per cent. fat) and two eggs contain fat 148 grams, protein sixty-eight grams, and carbohydrate fifty-six grams, making a total of 1828 calories. This is a basal diet for a person weighing about sixty kilos. Under such conditions the urine usually becomes sugar free in, from three to five days; if it does not, the insulin is increased, the increase in insulin depending upon the amount of sugar excreted in twenty-four hours, allowing one unit for every three grams.

When the urine has become sugar free on a basal diet and the required amount of insulin (our average case required about thirty units a day) the diet is slowly and proportionately increased until the patient is receiving sufficient calories to carry on his customary activity. During this process the dose of insulin in some instances had to be slightly raised.

While increasing the diet it is important to keep a proper relation between the fatty acid and the carbohydrate so that the ratio is never more than three grams of fat to one gram of carbohydrate preferably two and a half to one, because too great a preponderance of fatty acid over the carbohydrate tends to produce ketosis, the first evidence of which is the appearance of acetone in the urine.

The patient continues on this adequate diet plus insulin for about ten days. Since we have found that insulin undoubtedly increases carbohydrate tolerance it can be reduced gradually, five to ten units every three days, or until sugar again appears in the urine. If the sugar persists for three days the insulin is increased again to an amount just sufficient to take care of the sugar excreted. After three days the insulin is again gradually cut down. This process is continued in this manner in three day periods until the patient stays sugar free on an adequate diet without insulin. In our series only three patients were discharged from the hospital still requiring insulin, and this because they refused to stay until the insulin could be safely discontinued.

There are cases in which the patient is apparently out of danger, the blood sugar normal and the urine sugar free, yet there is an abundance of acetone, or both acetone and diacetic acid in the urine. This can be promptly corrected in every instance by adding more carbohydrate to the diet or reducing the fat, so as to establish the proper ketogenic antiketogenic ratio.

Another type of case we have frequently seen is one which, with a perfectly normal urine, the blood sugar remains persistently high (350-500 mgrms. per one hundred c. c. blood). These cases will respond very promptly to dietetic treatment alone. Such patients should be started on a diet of fat ninety grams, protein twenty grams, carbohydrate ten grams, which should be increased proportionately about one hundred calories every three days until a maintenance diet is reached.

While using insulin the danger of causing hypoglycemia should constantly be borne in mind. This can be avoided early in the treatment by always giving at least one gram of carbohydrate for every unit of insulin, and later in the treatment by reducing the insulin or increasing the diet as soon as the urine becomes sugar free.

Febrile patients require more insulin than afebrile patients, so that when the temperature becomes normal or definitely lowered the insulin should be stopped or reduced to about half the original dose.

When a patient has received a dose of insulin and does not eat or vomits the allotted meal, one gram of carbohydrate for each unit should be given immediately without waiting for symptoms, because the effects of hypoglycemia may come on with great suddenness and even produce coma within a few minutes.

If the above rules are carried out carefully the danger of hypoglycemia is very slight, except perhaps in cases of idiosyncrasy to insulin, but we have seen no instances of this.

To recognize hypoglycemia one has only to bear in mind the symptoms of diabetic acidosis, for in hypoglycemia the patient presents a train of symptoms which are almost just the reverse. The skin is pale and moist, there is marked perspiration about the forehead and chest, the respirations are rapid and shallow, there are tremors and twitchings of the extremities, delirium and finally coma. The most characteristic signs are pallor and sweating which are never seen in the hyperglycemic state.

A patient we treated recently was admitted in impending coma. She ran a temperature of 99° to 102° F. due to a severe cellulitis of the leg. After four days she was out of danger from diabetic coma, her blood sugar stayed at 170 mgms. per one hundred c. c. and her urine was negative for sugar and acetone on sixty units of insulin a day and an adequate diet. On this same diet the sixty units of insulin were continued for seven days after the temperature had become normal when although apparently doing well she suddenly became comatose in a few minutes. Her blood taken immediately showed twenty mgms. of sugar per one hundred c. c. and she presented the typical signs of hypoglycemia. Treatment was started within fifteen minutes after the onset. Two hours later the blood sugar was 270 mgms. but the patient remained comatose and died within forty-eight hours. No autopsy was granted. It was assumed then that perhaps the hypoglycemia causes some organic cerebral lesion which accounts for the persistence of coma even after the moderate hyperglycemia has been reestablished, just as one sees following carbon monoxide poisoning after the carbon monoxide has been removed from the blood.

Another case which had not progressed to coma was relieved in a few hours by fifteen minims of adrenalin (one to one thousand) by hypodermic injection and the juice of one orange by mouth.

INSULIN AN AID IN TREATMENT

It will therefore be seen from our series that insulin is merely an aid in the relief of diabetic acidosis and that it is not necessary and may even be harmful in the mildly toxic cases that will respond to dietetic treatment alone. It will also be seen that the dose of insulin, in the great majority of cases, is more or less constant and should never be given haphazardly. The dose should be controlled by a constant diet, a daily urine examination, and occasional blood sugar and carbon dioxide estimations. Since the advent of insulin it is no longer necessary to starve a diabetic patient for the first few days and in the milder cases the patients may be placed on a basal diet when first seen, using insulin only if sugar persists in the urine for three days.

Acetone in the urine in the absence of sugar always indicates a deficiency in carbohydrate or an excess of fat in the diet, and can easily be corrected. Sugar in the urine in the absence of acetone indicates an amount of carbohydrate in the diet above the patient's tolerance and can be corrected by giving a small dose of insulin or reducing the daily intake of food. Hyperglycemia with a normal carbon dioxide and a negative urine can be corrected by a dietetic treatment alone. The use of insulin in these cases is dangerous and moreover the dose is very difficult to control.

CONCLUSIONS

1. Blood examinations are not essential during the administration of large doses of insulin early in the treatment of severe cases; the urine is a more practical guide.

2. In severe cases the initial dose of insulin need never exceed forty units intravenously, and one gram of carbohydrate should be given for each unit.

3. Alkalis are not necessary for the relief of diabetic acidosis, when insulin is used.

4. Insulin increases carbohydrate tolerance.

5. Hypoglycemia is not a common occurrence.

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Practical Therapeutics

TINCTURE OF IODINE IN ROUTINE PEDIATRIC PRACTICE

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Of all the drugs in the pharmacopœia none has so broad a field of usefulness in the hands of the general practitioner as the preparation under discussion. Long before the surgeon had accepted it as an ideal local antiseptic in operative procedures, tincture of iodine had served the physician as a sovereign remedy in all sorts of local infections, bruises, sprains, pains of indefinite etiology affecting the bones or muscles, and in various enlargements of the lymphatic glands.

RINGWORM

It has proved to me an ideal parasiticide in diverse skin diseases. About thirty years ago on being appointed attending physician to the Hebrew Sheltering Orphan Asylum, which at the time accommodated over eleven hundred children, I was rudely confronted by a most virulent epidemic of tinea tonsurans affecting over four hundred children. Ringworm of the scalp in sporadic form is quite common in children's institutions, but in this case the careless use of hair clippers was probably responsible for the rapid dissemination of the disease. In the last three months the epidemic had become so serious in character that the services of the late celebrated dermatologist, Dr. Lustgarten, were solicited to stay its ravages. Do what he would, the epidemic stubbornly persisted and, as a last resort, he resorted to the free use of chrysarobin in tar oil, but without appreciable results. Not only had this treatment failed to effect a cure, but it proved very costly—thousands of pillow cases and sheets having been stained and burnt beyond repair. It was very painful to the children and laborious to the nurses, requiring as it did careful epilation of the loose hair.

Having previously cured tinea circinate by means of tincture of iodine, this remedy naturally suggested itself to me also on this occasion. But I soon learned that the too frequent application of iodine was productive of intense inflammatory reaction, and hence sought the best means of getting the benefit of the iodine without its detrimental effects. After considerable experimentation the following mixture proved to meet all indications:

Tinct. Iodini
Olei Ricini a a ʒiiiss
Acidi Phenolis
Olei Petrolei crudi a a ʒii
Olei Rusci q. s. ad ʒxvi

After clipping the hair close to the scalp the mixture was applied (by means of a small painter's brush) over the entire scalp, more thickly on the affected spots, once a day for five successive days. On the sixth day, the mixture was wiped off by means of waste cotton dipped in linseed or olive oil; the hair was clipped again and the scalp thoroughly but gently washed with the tincture of green soap. No epilation of the hair was required. The whole process was repeated for three or four successive weeks—when it was usually found that the trichophyton fungus had disappeared and that new hair was appearing upon the bald spots. By applying the mixture over the entire scalp we were enabled, not alone to arrest the transmission of the disease from one child to the other, but promptly to arrest the newly developed infections at their inception and also to prevent autoinoculation from one part of the scalp to another. This course of treatment was advantageously followed by a few applications of sulphur ointment or a two per cent. solution of resorcin and salicylic acid in alcohol and castor oil. In order to avoid staining of the bedding the child had to wear an oiled silk skull cap at night. It may be of interest to note that this method of treatment of tinea tonsurans has since become the treatment of choice in several large children's institutions throughout the country.

As already stated ringworm of the body yields promptly to a few applications of the undiluted tincture of iodine. In ringworm of the nails, on the other hand, the iodine has to be applied daily for several weeks, preferably enveloping the fingers in cotton and narrow bandages. In very stubborn cases the aforementioned mixture has invariably cured the cases under my observation.

PARONYCHIA

Paronychia can frequently be arrested in its inception by the use of iodine. A few drops of the tincture is instilled in the nail bed and well surrounded by a pledget of absorbent cotton and several strips of adhesive plaster. Usually only one dressing is required. This mode of treatment is particularly useful in paronychia affecting diabetics, in whom surgical procedures are generally contraindicated.

ADENITIS

In diverse forms of adenitis and local effusions tincture of iodine promptly and properly applied often arrests suppuration and hastens absorption of fluid. It should be remembered, however, that in order to obtain good results the affected parts must be well covered with cotton and bandages, completely to exclude the air, since, otherwise, the iodine is quickly evaporated.

ENLARGED JOINTS

Numerous cases of enormously enlarged joints, due to bursitis, synovitis, or arthritis sometimes resembling those of a tuberculous nature have promptly responded to a few applications of iodine externally. And sceptical as one is bound to be about the systemic action of iodine when applied locally, I nevertheless feel fully justified in recording that in many instances pleuritic effusions have entirely been absorbed by the means of the following mixture, applied externally for from three to ten days:

Tinct. Iodini
Guajacolis
Olei. Gaultheriæ a a ʒii
Liq. Petrolati q. s. ad ʒiv

Very recently I had an opportunity to corroborate my opinion of the specific action of tincture of iodine

in arresting the spread of erysipelas. The little patient was two weeks old and contracted erysipelas after circumcision. As the condition of the child was becoming very serious, the family physician consulted a prominent pediatrist, who predicted all sorts of grave possibilities. When I saw the baby the next day, the inflammation had already involved the entire lower extremities and had spread above the umbilical region. I painted around the baby's body, above the line of demarcation, two circles of iodine one inch wide and two inches apart, and advised advancement of the circles as the redness passed the borderline. The following day I was gratified to learn that the erysipelas was promptly arrested in its advance. I was consulted, however, again a few weeks later regarding the appearance of several abscesses on the baby's body which required incision and drainage. In this connection it may be of interest to relate that one of the abscesses had become localized at the lower lumbar region and was diagnosed by a surgeon as a spina bifida—rather a pompous diagnosis, considering the clarity of the history of the case.

NOSE AND THROAT AFFECTIONS

The value of iodine in nose or throat affections has long been recognized by the profession at large. With the exploitation of the numerous newer silver preparations, however, its use has recently become somewhat restricted; yet it still has many adherents. A one per cent. solution of tincture of iodine, in glycerine, preferably combined with a one quarter of one per cent. of carbolic acid, often acts very efficiently in chronic rhinitis and rhinopharyngitis, and in suppurating adenoids. As in these cases the submaxillary glands are generally implicated as well, it is of advantage to apply also a five per cent. solution of tincture of iodine in liquid vaseline to the swollen glands. Tincture of iodine acts almost as a specific in cases of postoperative infections after adenotonsillectomy, manifesting itself by persistent hyperpyrexia, undue sloughing of the tissues, and symptoms of general sepsis. Often after one swabbing of the throat all the symptoms disappear as if by magic. The application may be repeated once or twice a day for several days if necessary. It may also be mentioned here that the spasmodic coughing and extreme difficulty in swallowing, which occasionally result from injury or infection of the uvula during the tonsillectomy, are also quickly remedied by a few applications of tincture of iodine. In tonsillitis and cognate affections I prefer the following mixture:

Tinct. Iodini
Tinct. Myrrhae a a ℥i

Sig: Ten drops in a wineglassful of water to be used either as a spray or gargle every hour or two.

The same formula acts very beneficially also in stomatitis, pyorrhea, and gingivitis, while in alveolar abscess the undiluted tincture of iodine applied *pro re nata* is to be preferred.

As regards the use of tincture of iodine in pyorrhea alveolaris, I believe it is to be regretted that the modern dentist is gradually discarding so useful a remedy and is instead exploiting the numerous new, often worthless, products which are being foisted upon the credulous public by shrewd pharmaceutical mercenaries.

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COLLOIDAL THERAPY IN MALIGNANCY

(A Preliminary Report)

Donald C. A. Butts

Philadelphia

Since the recognition of colloids (the colloidal state of matter) as separate and distinct from crystalloids (Graham, 1861), the theoretical, experimental and clinical studies of colloidal chemistry have gained much ground and recognition. In so doing, many new phases of physics, biology, chemistry, and therapeutics have been opened up and developed to an astonishing degree.

In this entirely separate field of chemistry, speculation has given way to determined facts and deductions, this statement holds good regarding the contents of the brief report herewith submitted.

In June, 1923, I read, and later published (1) a report incorporating several theoretical and experimental phases of the use of colloids in the treatment of malignancy. At this time I suggested the use of the anionic colloids (negatively charged, passing to the positive pole) to adjust the physicochemical alterations which I had found existing in neoplastic tissue. Since that time, due to extended biological experimentation, combined with an extensive investigation in the fields of radiology and röntgenology, my former suggestions are apparently now firmly established, and I feel that a second clinical report is justified at this time.

Before issuing the report referred to, it was determined by accurate experimentation with standard laboratory strains of rat tumors that such tissue (neoplastic tissue) existed in an electropositive state of physical or physicochemical unbalance as compared to normal tissue; or in other words, such tissue was possessed with a greater or higher potential than was normal tissue.

Such determinations were made by means of a highly sensitive galvanometer. After the completion of this test the animals were treated with electronegative colloids, which reversed the current flowing through the galvanometer, showing that tissues, formerly with a greater or higher potential, were rendered neutral insofar as physicochemical metabolism was concerned. These animals likewise showed marked improvement, both local and systemic, following such treatment.

Extensive experimentation in the fields of radiology and röntgenology demonstrate that the negative electrons, manifested as beta rays of radium or corpuscular radiations from the röntgen tube, possess like effects, and these rays alone are responsible for the desired biological cell change.

Those who are employing radium as a means of therapy in malignancy are naturally confronted with its limitations with which to combat dissemination. The limitations of röntgen therapy are, however, not so great, but will require a long period of research to determine the best means of handling, to cope scientifically with such problems.

To span the time until such developments can be brought about with röntgen therapy, or for use in preventing and combating metastases, I have advocated the use of electronegative colloids in the treat-

ment of inoperable cases, or in any case where widespread dissemination is likely.

If cells comprising malignant neoplasms exist in an electropositive state, and metastases occur by cells migrating from their initial pathology to another part of the body, it is quite reasonable to suppose that such cells are endowed with, and convey the physical properties, i. e., electropositive state, as possessed by the primary growth.

Upon this reasoning, we believe that these cells may be returned to a condition of normality by the use of electronegative colloids, and in such manner prevent the formation of secondary deposits; or if such deposits do exist, they may, in a similar way, be rendered potentially inactive and harmless.

From such theoretical and experimental deductions, the electronegative colloids of sulphur, iodine, and selenium have been put to extensive clinical use with extremely gratifying results.

Unfortunately the majority, if not all cases, treated by this means of therapy have been prognosticated hopeless. Many were postoperative, and irradiated, and the great majority were of recurrent type.

Coming under this method of treatment were cases of advanced carcinoma of the liver, uterus, lip, stomach, and various forms of superficial lesions of carcinomatous type. Many of these were verified malignant by pathological section. The cases not subjected to biopsy were pronounced malignant by competent authorities.

The majority of the patients have been materially benefited, some going on to apparent recovery. In all cases pain was almost immediately relieved (narcotic administration could usually be discontinued or greatly reduced), gastric and constitutional conditions benefited.

From the observations noted above we feel that this method of therapy is of great advantage for relieving pain, prolonging life, and giving the patient a possible chance for recovery.

REFERENCES

1. Butts, Donald C. A.: Malignant Neoplasms: Colloidal and Electrical Phenomena Observed and Their Experimental and Clinical Aspects. Medical Journal and Record, February 20, 1924, Vol. CXIX, No. 4, page 196.

Intravenous Use of Acriflavine in Gonorrhea. H. Jausion, E. Diot and N. Vourexakis (*Bulletin de l'Académie de médecine,* June 2, 1925) claim priority in the use of intravenous acriflavine injections in gonorrhea. Their main object is to overcome the more chronic cases by sterilization of all the periurethral glands, which do not respond well to local treatment.

Solutions of 1:200, 1:100 and 1:50 of acriflavine in distilled water are used, the best practice, according to experience with 1,417 intravenous injections, being to inject five mils of the 1:50 solution at a dose, thrice weekly. In hospital cases, however, daily injections of five mils of the 1:100 solution or of two or three mils of the 1:200 solution are favored as yielding a more sustained effect. In administering the injection, the patient's blood is mixed with the dye solution in a ten or twenty mil syringe by drawing the piston back and forth and the whole then slowly injected. The injections are continued until recovery is obtained, this requiring generally ten to fifteen injections in incipient gonorrhea, twenty in an ordinary established gonorrhea, and about thirty in gonorrhea of several years' standing. Intraurethral injections are superfluous. Indiscretions of diet or drink interfere but little with the results from the intravenous treatment. Out of sixty-seven cases receiving this treatment, thirty-seven were completely cured, with cessation of discharge and disappearance of gonococci; fifteen showed good results, promising an ultimate cure; eleven were less markedly improved, and four were actual failures. Many of the cases had previously had numerous recurrences or reinfections. In initial, incipient injections, three or four injections generally abort the disease, and the gonococci disappear in twenty-four to forty-eight hours. In the older cases the discharge may stop abruptly or only after the gonococci have been absent for some time. A case of posterior urethritis with cystitis, prostatitis and cowperitis, followed by epididymoorchitis and iritis, was cured in forty days of exclusively intravenous treatment. Reactions from the injections are very slight and evanescent, and no alarming reaction occurred in 1,417 injections. Eventually a slight pseudoicterus, as a rule hardly noticeable, may develop.

In treating women the method is particularly serviceable, on account of the widespread gonococcicidal action which is required.

Treatment of Carbuncles.—Walter Estell Lee and T. McKean Downs (*Therapeutic Gazette,* October 15, 1925) state that carbuncles differ from other forms of suppuration in the subcutaneous tissues because of the anatomical and mechanical factors present in the region in which they occur, namely, a thick tough true skin connected with the underlying fascia by strong vertical fibrous septa. These factors not only prevent the breaking of the original focus through the skin, but also force it to spread laterally and become pocketed in the honeycomb like area.

The tension is perfectly relieved in all these pockets of infection, when, in addition to the usual crucial incisions, incisions are made in each section parallel to the skin surface, which opens all the diseased fat columns. When this has been done, each area of infection acts like a separate boil, and is able to drain freely onto the surface. The simple crucial incision is not efficient; excision *in toto* is unnecessarily destructive and prolongs the time of disability. Certain other treatments for carbuncles which have been advocated are discussed and reasons given for their condemnation.

Intracardiac Adrenalin Injection in Grave Collapse Under Spinal Anesthesia.—Cotte and Cartotto (*Presse médicale,* May 30, 1925) report a case of severe collapse toward the end of an abdominal operation under spinal anesthesia. In spite of artificial respiration and injections of caffeine and ether, the breathing and heart contractions had ceased, the pupils were dilated, and the corneal reflex was lost. A few seconds after intracardiac injection of two milligrams of adrenalin, the patient came out of his collapsed state, and he was later restored to health.

Historical Medicine

Portraits of Charcot

DR. HENRY MEIGE

Professor of Anatomy at the School of Fine Arts, Paris

(Translated from *Aesculape*, May, 1925)

INTRODUCTORY NOTE

This year is the centenary of Charcot's birth. One of the men who knew him best, not only in the fame of his clinical teaching, but also in the intimacy of his home life, was Dr. Henry Meige, professor at the School of Fine Arts, and he has made a study of the various portraits of his great master. We are very grateful to him for this. Our gratitude is due also to Dr. Jean Charcot, through whose courtesy we have been permitted to use the illustrations which supplement this article.

Both the body and the mind of Charcot were exceptionally impressive. Dr. Henry Meige, in a study of Charcot the artist, published in 1898 in the *Nouvelle Iconographie de la Saltpêtrière,* has given us his essential characteristics: "Charcot was grave; his mind, trained from his early days for studious thought, remained perpetually absorbed in the research of the new problem. He talked little; scientific discipline had taught him to weigh the precise value of words. His approach was cold, his greeting imperceptible, his hand advanced only half way, and there was rarely any response in its clasp; he had no use for the manifestations of merely banal politeness. Moreover, Charcot, even at the summit of his glory, retained always a vestige of timidity.

"As to his face, somewhat like a theatrical mask, firmly adapted to the rôle of miraculous warrior, is is not superfluous to recall that nature alone created it to express all these characteristics? This mask was at twenty the same as at sixty, with black hair more or less rumpled, but always dressed in the old fashioned manner, impassive, a bit enigmatic, impressive. The daily use of the razor which emphasized his Cæsarean profile, was the only artificial addition made to nature's work. . . ."

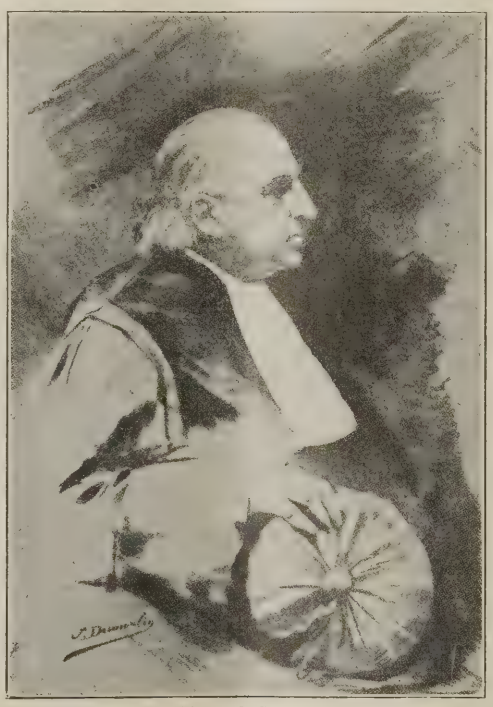


FIG. 1.—An etching of Charcot by Demoulins.

We celebrate, this year, the centenary of one of the glorious personalities of French medical history —Charcot.

This work will be commemorated on this occasion by those of his pupils who especially enjoyed the privileges and benefits of it—Pierre Marie and Babinski. Another, Souques, enjoyed his intimate friendship. This article will be devoted only to the works of art which have helped to perpetuate the memory of the great personality of Charcot.

Very few great men have provoked representations of themselves. Scultures, paintings, medals, engravings, made from the living Charcot or after his death, constitute a document that should be examined.

Why this abundance of portraits? Had Charcot a weakness in thus humoring himself? Not at all. He attached no more importance to his appearance than to that of others; only spiritual qualities counted in his eyes.

If these representations are numerous, it is for two reasons: Charcot loved the fine arts; he had himself a very keen artistic sense and was himself a facile draughtsman. Consequently, he enjoyed the company of artists and took pleasure in encouraging their work. But, above all, no one was better endowed than Charcot for tempting the chisel, the brush or engraver's steel.

His face was unforgettable. A brow pure and powerful; entirely uncovered, hair combed back and falling down to the neck behind; a short nose, firm and straight; lips thin and a bit haughty; chin firm but not hard set; and above all deep eye sockets, like the ancients', within which one could see, shaded by heavy lashes, eyes sometimes very soft, sometimes imperious. Such a face could not fail to attract artists, and so one understands why there are so many portraits of Charcot.

During the first years of his scientific life the beauty of his profile, the mystery of his expression in which severity was tempered by a trace of timidity, attracted attention. Charcot was compared when young to Bonaparte, which did not flatter him, and moreover his head was large and long; he usually held it well forward, above shrugged shoulders. He was also said to have Dante's nose, and this was true enough. There was mention, too, of his Cæsarean profile, and it is true that upon seeing him one thought spontaneously of the beautiful bronzes of Roman art.

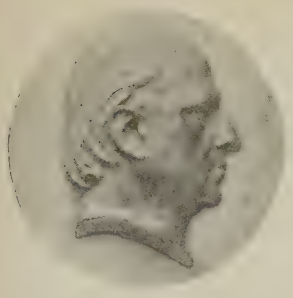


Fig. 2.—Medallion by Madame Charcot.

But Charcot was above all just Charcot; a personality unique not only in physique but in spirit.

It is in sculpture that portraits of Charcot are most numerous. The oldest bust of him was made about 1873 by an Italian sculptor established in Paris, Mezzara, friend of the painter Protais, the author of the *Dernières Cartouches*, himself a great friend of Charcot and of the painter sculptor Gérome. We see here Charcot at his age of greatest beauty, when he was graceful and slender with youth, and before his features had undergone the inevitable blemishes of age. His hair, still abundant, had even then the familiar backward sweep; the profile is very pure; the eye deep and of the kind that sees ideas rather than men. There is in his expression a gravity that is imposing and a remarkable contemplative quality.

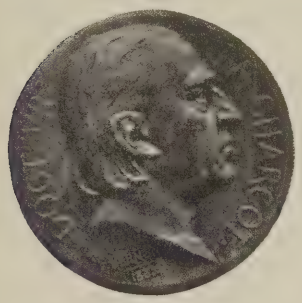


Fig. 3.—Medallion by Vernon. Collection of Prof. Pierre Marie.

Dalou has left a bust of Charcot which is a very beautiful work of art. One finds there the two dominating characteristics of this great artist; fidelity to nature, and the ability to fix expressions, no matter how fugitive they may be. This is why he has made of Charcot a portrait of the greatest truth and power. No flattery in the representation, perhaps too realistic, but in every detail of the work representing the most rigorous accuracy. However, Dalou was not satisfied with it; the ensemble did not express to his taste all he had seen, not all that he wished to bring out; a countenance and the thoughts back of it.

Another bust of Charcot was made by his own wife in 1880. Madame Charcot, born in a milieu where works of art abounded, had more than a taste for the beautiful; she had real artistic talent. She devoted herself, not only to her children, but also to beautifying her home; Charcot helped her. The bust that she made of her husband reveals some technical inexperience, but it is a good likeness and the expression is not without a certain nobility. It has in the eyes the alluring fire of old romance. Madame Charcot made also a medallion which depicts ably the unforgettable profile.

Fig. 5.—Bust by Dalou.

There is also a bust of Charcot by Dr. Vincent, whose artistic talent often had occasion to manifest itself at the Salpêtrière, when Professor Raymond occupied the chair in the clinic of diseases of the nervous system. Although this bust was made after Charcot's death, it is not without merit, and gives a good idea of the great master of French neurological science in the last years of his life.

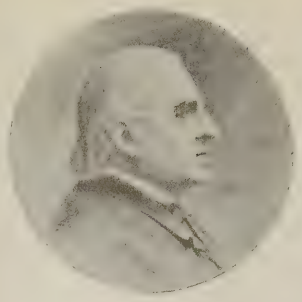


Fig. 4.—Etching by Professor Paul Richer (1891).

A statue of Charcot, standing, was unveiled some years after his death on December 4, 1898, through a subscription of his pupils and friends. Crowded up against the wall of the entrance pavilion of the Salpêtrière, this statue lacks space. The professional garb gives it heaviness rather than majesty. The head is powerful, but the features are hard. It well expresses the firm will which was one of the dominating characteristics of Charcot, but it lacks the light of his luminous mind and spirit. The extremities, too gross and too knotty, almost make us forget the fine elegance of the artist's hand. Was it necessary, in order to symbolize his studies of the brain, to place at his side this grotesquely deformed cadaver? A statue less pompous, serious and grave, standing on the ground in front of the Salpêtrière, counterpart to the statue of Pinel, would have left of Charcot a memory more sincere and more dignified. One feels that he himself would have wished this. Nevertheless the statue has its good points. One can see the mark of the great artist, Falguière. But one cannot help but regret that the latter, who nevertheless knew Charcot well—he was his fellow student at the *Lycée Bonaparte*—has given so much importance to costume, especially when Charcot during his whole lifetime showed himself to be scornful of apparel and indifferent to honorary insignia. Not only in his early youth, when he was acquainted with poverty, but also at the summit of his glory when riches overwhelmed him, Charcot loved only the simple. Moreover, he was always indifferent to questions of money.

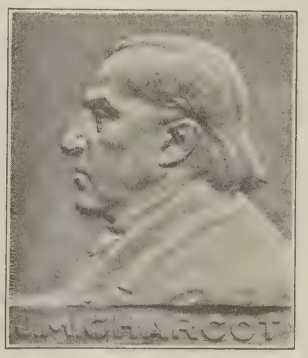


Fig. 7.—Medallion by Morlon (Salon of 1925).

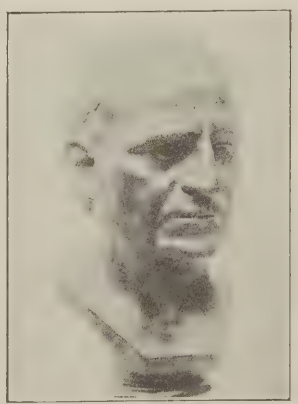


Fig. 6.—Bust by Madame Charcot.

There are also medals of Charcot. About 1883, having been appointed professor of the clinic of diseases of the nervous system at the Salpêtrière, he relinquished the presidency of the *Société*

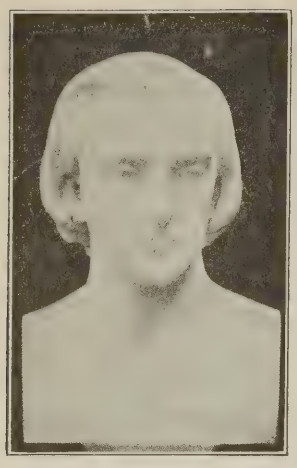


Fig. 8.—Bust of Charcot as a young man by Mezzara.

Anatomique which he had already held for some time. Cornil, his pupil, elected president in his place, proposed giving him a souvenir. "The proposition," according to accounts of the period, "was received, not only with enthusiasms by the members, both active and honorary, but also by the correspondents, both national and foreign. Very few subscriptions have ever been taken with such joy and interest in contributing." The souvenir in question was to be a medal with the portrait of Charcot, and its execution was entrusted to Vernon. The choice of artist could not have been happier; his medal of Charcot is among the best of his work. It is strong, sensitive, very true to life, and beautiful. Pierre Marie, who has a replica of the original, has had made an excellent photograph. . . . .

Another medal representing Charcot wearing his professor's cap was made by the daughters of one of his intimate friends, the Misses Casella, two talented artists who each year come to spend several months at the family estate of Charcot, and who, with his own daughter, Jeanne, have added to the decorative works with which the house is ornamented.

At the Salon of this year was exhibited a bronze plaque of Charcot. It is the work of a sculptor already renowned, Morlon, who, without having known Charcot, was so intrigued by his impressive face that he tried to model him. He has known how to reconstruct him and to give him grandeur.

In painting there exist several portraits of Charcot. None equals the sculptures. The earliest is in the old hall of the *Charité* and dates from the time when Charcot was at the close of his internship. It is no more than a sketch; but one finds on this young profile, very pure, the energetic traits which were accentuated with age, and already that gravity which was always the dominant note in Charcot's expression.

A painter whose name is today almost forgotten, Tofano, attained toward the end of the last century almost worldwide fame through a picture called Alone at Last, representing a young bridal couple finding themselves finally *tête à tête* after the marriage ceremonials. Tofano was one of Charcot's friends; to show his gratitude for Charcot's generosity, the artist painted his portrait in water colors in his professor's garb. This work, which is dated 1891, is not without merits; the harmony in reds, the fine sheen of the satins and silks appeal agreeably to the eye, the pose is noble, and, if one hand is perhaps too plump, we have the fineness of the fingers which is lacking in the statue of the Salpêtrière.

To help another artist in time of need, Charcot, not until after much persuasion, consented to have his portrait done in the robes of the Institute. This is also a water color, but with a smaller canvas; it had for Charcot merely the value of a good deed done.

The portrait of Charcot which is perhaps the most widely known is that which figures in the picture of Brouillet entitled A Lesson at the Salpêtrière. The picture represents an actual happening. It was in 1888 at the time when Charcot's course on hysteria attracted to his amphitheatre, not only a large number of doctors, but many of the curious with whom he never had any sympathy. The scene represented by Brouillet shows all the happenings in the lessons on nervous affections and diseases of the brain, spinal cord and nerves. It gives us an exact picture of the teaching of Charcot. He is represented standing, stooping slightly, indicating with a sober gesture the patient supported by his clinic chief (it was then Babinski). Around him are grouped his old pupils, his interns. One recognizes there Bourneville, Gilbert Ballet, Pierre Marie, Gilles de la Tourette, Jean Charcot, etc. And some frequenters of his lessons, Aibot, Paul Arène, Philippe Burty, etc. The plainness of the walls of the amphitheater, the rapt attention of those present, the great simplicity of the master, give to this scene an atmosphere of seriousness. It corrects, or in any case, disconcerts, those who, on the word of malicious talebearers, have imagined that the courses in the Salpêtrière served as the pretext for theatrical exhibitions, and that Charcot played the part of leading man. Absurd notion, the fruit of ignorance and envy! For, if Charcot did show himself to be desirous of introducing into his teaching everything that could reach the eye, no one was more averse than he to any form of showing off.

Finally Charcot and the engravings of him. One of the best of these is without doubt the aqua fortis of Paul Richer, who was for a long time his laboratory chief at the Salpêtrière. Charcot knew how to appreciate Richer, for he understood all his teaching could mean to a pupil who was later to attain fame not only through his work in anatomy for artists, but as a draughtsman, sculptor and medalist. In return, Paul Richer has perpetuated the features of his master. The portrait engraved by him will always remain one of the most sincere representations of this great personality. He is serious, he is grave, he is true.

Another engraving in aqua fortis represents Charcot dressed in his professor's robes. It is by Desmoulins. The drawing is free and vigorous, but the pose is a bit theatrical. Desmoulins has also included Charcot in an engraving depicting a number of contemporary physicians: Potain, Millard, Damaschino, Gilles de la Tourette, etc. The likeness and the expression are admirable.

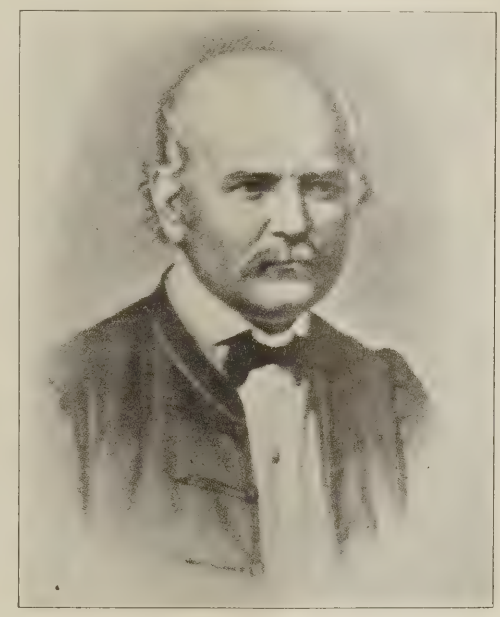
Most of these works of art may be found together in the country house where Charcot passed his vacations, in the Quartier Saint James, at Neuilly sur Seine. It is the home today of his son, Jean Charcot, who was one of his last pupils, and who, among the cruises which have made him famous, has taken upon himself the task of putting into a frame loved by his father, souvenirs of him and his life and work. If science is grateful to him for this, we now realize that art is none the less so.

Contributors to the Science of Medicine

Ignaz Philipp Semmelweiss

In the history of midwifery, which contains many dark pages, there is one name which shines refulgently and that name is Semmelweiss. While obstetrics, and gynecology too, lag behind other branches of medicine and surgery, obstetrics would be in a much worse position had it not been for the discovery by Semmelweiss of the true etiology of puerperal fever and the application therefrom of a logical method of treatment.

Perhaps in the whole history of medicine there are only two instances of discoveries which have brought about direct and immediate saving of life and prevention of suffering, the discoveries, respectively, of Edward Jenner and Ignaz Philipp Semmelweiss. It has been the fate frequently of men who have opposed traditional views which have upset the complacency of the followers of routine that they have been misjudged and sometimes deliberately misrepresented and slandered by their contemporaries. This has been the case oftentimes in medicine. Revolutionary ideas, even if they promise to lead to great benefits to the human race and the alleviation of suffering, are seldom if ever popular. It has happened that discoverers in medicine and surgery, and in modern times, too, have been subjected to indifference, obloquy and persecution.



IGNAZ PHILIPP SEMMELWEISS

Semmelweiss is a conspicuous example of this kind of treatment which embittered his life and helped to drive him insane. The story of his life and his doughty deeds are not well known to the English speaking medical profession, in spite of the fact that an international statue of him was unveiled in Buda-Pesth in 1906.

Ignaz Philipp Semmelweiss was born about the middle of July, 1818, at Ofen on Buda, now recognized as part of the great city of Buda-Pesth, the capital of Hungary. His father was a well to do shopkeeper and his mother, Theresa Müller, was of the same class. According to Tiberius von Gyory he was neither a German nor an Austrian, although after his death and when his fame was firmly established Germany laid claim to him as one of her sons. In the words of Sir William Sinclair of Manchester, who wrote his life, "Semmelweiss was a true Hungarian by birth, temperament and education, and he and his brothers proved in the troubulous times of revolution and civil war that they were Hungarian patriots who could make great sacrifices for the Fatherland."

The boy Ignaz went to an elementary school where he learned little, education being at a low ebb in Hungary at the time. The children of the Hungarian-German community had to learn two languages and it is stated that Semmelweiss learned neither properly and could never read or write as a well educated man. His further education in arts was as defective as that of the elementary school and he, therefore, began his medical education with the disadvantages or advantages of not being crammed with facts, many of them useless, which is often the lot of talented boys when at school. He had an open mind free from prepossessions and not disciplined to bow to tradition and authority as the minds of most of his antagonists of the future who had been trained in the rigid German fashion.

After passing two years at the University of Pesth engaged in the study of philosophy, he betook himself to Vienna and entered as a student of law at the university. He soon tired of law and at the age of nineteen registered as a student of medicine, going through the usual courses. He spent the second and third years at the University of Pesth; the remaining years of undergraduate study were passed in Vienna.

He is said to have been an industrious student, but brimming over with mental exuberance and physical activity. In March, 1844, Semmelweiss had passed all the examinations for the degree of doctor of medicine, but was prevented from taking his degree then on account of the sudden death of his mother. However, he obtained his degree in April, 1844. He worked then especially hard for the diploma of master of midwifery and on August 1, 1844, he was made Master of Midwifery. As he says in the introduction to his work, the *Etiologie*, "On July 1, 1844, I announced myself to the director of this Clinic as aspirant for the post of assistant, the first time a vacancy should occur. On July 1, 1846, I definitely assumed the duties of assistant at the First Obstetric Clinic, but I had to resign in October in favor of my predecessor, Dr. Breit, who had obtained a two years' extension of his appointment."

However, Semmelweiss during the time he was waiting for this post turned it to good effect. He had free access to the practice of the Clinic without being tied down to routine duties and he availed himself of these opportunities to the utmost. Not having the time to attend the Gynecological Clinic, he

examined the bodies of women who had died from gynecological diseases or operations and owing to the friendly interest of Rokitansky, the world famed professor of pathology in Vienna, he was able to obtain abundant material.

It may be said that then, as up to the time of the great war, Vienna was one of the best medical and surgical centres of the world, and had a large and well organized Lying-in Hospital. Semmelweiss took on the duties of first assistant at the First Obstetric Clinic towards the close of 1846, and while busy and contented worried greatly over the cause of the frightful mortality from childbed fever among the patients of the Clinic. In the year 1846 there were 460 deaths in the First Clinic and 105 deaths in the Second from puerperal fever alone. Before Semmelweiss various opinions prevailed as to the etiology of puerperal fever.

According to the most generally accepted doctrine there were two etiological factors; one external acting from without, the other internal, depending upon the condition of the organism during pregnancy and parturition, and whatever changes of nomenclature were introduced and whatever more or less obscurely expressed opinions became most prominent and generally accepted in a generation, we always find these two etiological factors at work in producing the phenomena of the malady. Gordon, of Aberdeen (1795), alleged that puerperal fever was an erysipelas of the bowels and peritoneum. Indeed, by the middle of the nineteenth century the almost universal belief in Great Britain and America was that erysipelas in the puerpera and puerperal fever were identical maladies. Again there was the "variable" theory of puerperal fever enunciated by Eisemann in 1837. That puerperal fever was disease *sin generis,* all the zymotic diseases were supposed to be capable of assuming the form of puerperal fever while concealing even their most characteristic features. In Great Britain where the most rational pioneer opinions on the subject had developed, there was a general belief in a contagium.

The supposed external causative factors were still more confusing and vague. Certain alleged influences of an atmospheric, cosmic, telluric nature bulked large in the minds of a part of the profession as external factors. Denman was among the first in Great Britain to express the opinion that puerperal fever was conveyed infection, but as Sinclair in his *Life of Semmelweiss* says, "his views were by no means clearly expounded."

There was a general belief, almost up to the time when Semmelweiss made public his doctrine, that the pregnant and puerperal woman was a thing unique in nature. Virchow in 1861 and Barnes in 1875 supported the theory of a spontaneous origin. In short, puerperal fever was considered to be as a disease something peculiar to pregnancy and the puerperal state.

The situation as regards the etiology of puerperal fever was chaotic in a high degree and the results of this ignorance were appalling at the time when Semmelweiss began to study the question seriously. It may be noted that at first the Hungarian pioneer was a milk fever epidemicist, and had far to travel to the doctrine of a decomposed animal organic matter directly conveyed to the genitals of an individual patient as the only etiological factor. But when he had completely mastered his discovery, or his discovery had mastered him, he was able to place erysipelas in its proper position in relation to puerperal fever, as a producer merely of decomposed animal organic matter.

As Sinclair has pointed out, "The modern universally accepted doctrine of the etiology of puerperal fever is that puerperal fever is a wound fever, and wound fever is wound poisoning. The supplementary doctrine is also universally established except for a mere logomachy, viz., all infection comes from without.

It was during Semmelweiss's second term as assistant in the First Obstetric Clinic that he made the discovery. Proceeding on the ground that it was the cadaveric material adhering to the hands that caused puerperal fever and that if in obstetrical practice the hands were perfectly clean, then the disease could be prevented to the extent to which it originated by the presence of cadaveric material on the examining fingers.

Finding further that washing the hands with soap and water failed to remove all the cadaveric particles he began in May, 1847, to employ chlorinated lime with which every student was required to wash his hands before making an examination. There was a marvellous reduction of mortality in the First Clinic, as a matter of fact, in March and August, 1848. No death occurred among the patients. On the other hand, in the Second Clinic the rate of mortality went on as usual, although owing to the fact that in the Second Division the patients were seldom examined and tended always to keep out puerperal fever.

It was then discovered that not only cadaveric particles adhering to the hand, but that putrid matter derived from living organisms produced puerperal fever. And again that atmospheric air might convey the decomposed organic matter which produced puerperal fever and henceforth patients suffering from wounds or diseased joints in which such matter was present were isolated.

The discovery of the causation of puerperal fever was now complete. In the *Etiologie* and the *Briefe* Semmelweiss makes frequent mention of these three sources of infection. It should be explained that Klein, the professor of obstetrics in the time of Semmelweiss, taught his midwife pupils by practice on the cadaver, which, of course, accounted for the cadaveric particles adhering to the hands. The practice of making postmortem examinations was universal in Austria at that time.

In July, 1855, Semmelweiss was appointed professor of theoretical and practical midwifery in the University of Pesth. In June, 1857, after settling down to the life in Buda-Pesth of a patriotic Hungarian citizen, Semmelweiss, thirty-five years of age, married a young woman of eighteen.

In Europe generally the doctrines of Semmelweiss met with but little support. This was due partly to the jealously and narrowmindedness of many of the professors of obstetrics and partly to the lethargy of Semmelweiss himself. He thought that his views had been proved and should rest on their merits. In Great Britain and Ireland the doctrine was received generally with favor. In 1857 Semmelweiss resolved to prepare and publish a book on the subject next his

heart and in October, 1860, the *Etiologie* was published. It has long been out of print and was becoming almost impossible to obtain, when in 1905 the whole works of Semmelweiss were edited by Tiberius von Gyory, privat-dozent in the University of Buda-Pesth, and published under the auspices of the Hungarian Academy of Sciences.

Semmelweiss in his later years interested himself in gynecology. He had always maintained that obstetrics and gynecology were so intimately related that they should be combined in teaching and practice. In his gynecological practice he acted on the same principles of antisepsis that he had introduced into the practice of midwifery. By the introduction into operative gynecology of antisepsis he was the forerunner of Lister. He was the first in Hungary to perform ovariotomy which sheds a light on the state of gynecology in that country. This was in 1863.

During the last two years of his life his mental condition caused his relations and friends much anxiety and on the last day of July, 1865, he was taken by his friend, Ferdinand Hebra, to an asylum in Vienna and detained there. It was soon discovered that a finger of his right hand had been injured probably as a result of one of his gynecological operations. The wound had become gangrenous, cellulitis spread along the arm, and after the formation of metastases it developed into pyopneumothorax, of which he died on August 19, 1865. The autopsy revealed extensive organic disease of the brain. The remains were first interred in one of the burying grounds in Vienna and it was not until the year 1891 that they were conveyed to his native place where they found a more becoming last resting place. It is only within a comparatively recent period that Semmelweiss has been given the honor which is his due. It is true that Dr. Oliver Wendell Holmes suggested in an essay published in 1843, *Contagiousness of Puerperal Fever*, that puerperal fever was contagious, but Semmelweiss worked out the subject practically. It was his whole life, for which he fought and died and he really solved the problem of its etiology. Semmelweiss lived and died a martyr to science but his labors and sorrows have not been in vain. He revolutionized the practice of obstetrics, which is his monument.

A Pope as Physician

T. J. DOWNING, M.D.

New London, Mo.

In the Medical Journal and Record, December 3, 1924, page 557, there is an article entitled A Pope as Physician, from which I quote as follows: "For Church and political reasons a conclave of Cardinals, in the year 1276, elected to the Papacy a Portuguese Physician, Petrus Hispanus, already Cardinal—Bishop of Tusculum, as Pope John XXI. According to nearly all writers of ecclesiastical history, he should have been named John XX; since there were only nineteen Johns before him."

Some years ago an old book came into my possession by way of the second hand book store route; three 12mo volumes; page capacity 1436; title long. But I will venture.

"Histoire Chronologique Des Papes, des Empereure Des Rois, Des Electeurs de l'Empire et Autres Princes, qui ont regne en Europe despuis la naissance de Jesus-Christ jusqu' a present. Avec un Abrege Historique a chaque Article, ou l'on voit Ceremonies de l'Election & Couronnement des Princes electifs, la nature du Gouvernement, les Droits, Privileges & Prerogatives de chaque Etat & de chaque Prince, &c. Par Mre. P. B. M. Malbranche Ecuir, ci-vant Licencie aux Universites d.Oxford & de Cambridge, &c. Chez Jean Leonard, rue de la Cour. MDCCXLI.

As to the quotation in the Medical Journal and Record: "he should have been named John XX, since there were only nineteen Johns before him." As a matter of fact there were only eighteen Johns before him. In proof, quoting from the "Old-Book":

"985. Jean XV, succeda lui," John XIV, "l'an 985. Il maintint autant qu'il lui fut possible l'Eglise en paix, & n'oublia rien pour bien remplir tous les devoirs de son ministre. Il mourut le 7 Mai de l'an 996, apres 10 ans, 4 mois et 12 jours de Pontificat." Then follow Gregoire V, Silvestre II and Jean XVII, 996-1003. Thus John XVI is *apparently* missing. But as a matter of fact John XVI is not missing. Turning to page 70 Tom I, in List of "Anti-Papes" is the following: "997. *Jean XVI. faux Pontife, s'establit dans le Siege de S. Pierre l'an 996, ou 979. Ont dit qu'il etoit scavant, & qu'il avoit compose divers ouvrages. Il mourut le premier jour de Juin de la meme annee."*

Now as to John XX. John XIX was Pope 1024-1033. Then we jump to 1276 and find in the "Old-Book": "1276. *Jean XXI, nomme Jean Pierre, Cardinal de Frescati, natif de Lisbonne en Portugal, lui succeda," Adrian V. "le 13 Septembre de l' an 1276. Il etoit docte, saye & pieux. Il mourut le 20 Mai de l' an 1277, apres 8 mois et 8 jours de Pontificat."* Thus John XX is apparently missing. But as matter of fact John XX is not missing. Turning to page 71 Tom I, in List of "Anti-Papes" is the following: *"Jean XX. C'est ainsi que l' appellent quelques-uns, qui disent, que le Pape Benoit IX, se jugeant indigne du Pontificat, ceda cette Dignite a Jean Archipretre, qu'il faut distinguer du Pape Gregoire XI. according la Plus faine opinion."* Benoit IX succeeded John XIX and was Pope 1033-1044.

There are four Johns in the List of "Anti-Popes." Only two are numbered—John XVI and John XX. Thus the apparent gaps are filled. There must be a justification for thus numbering John XVI and John XX. It completes the list from John I—523 to John XXIII 1410. Notice old style French.

Editorial Articles

THREE MOVEMENTS

Three bowel movements a day are advocated by Dr. Fisk of the Life Extension Institute, and presumably he believes that this unusual liveliness of the gut will add to our span of existence. At a meeting of the trustees of that organization, ex-President Taft poked considerable fun at its director, saying, in effect, that he was well satisfied with the program of the institute, but wished to be excused from complicity in such activity of the bowels.

Lane has recently championed this frequency of evacuation and recommends of course that constricting and obstructing bands be removed by the surgeon in order that such activity will be unrestricted.

Verily the colon, which formerly had a rather peaceful day of it after not more than one evacuation, has been much set upon since the days of Metchnikoff, and, with all the theories which have been advanced against its sluggishness, or which threaten its very existence, we know of no actual figures to show that it is so at fault. On the contrary, there are statements that in cases where it does not empty itself for days the person may be in good health.

Perhaps its degree of activity needs to depend on what it contains. It is unfortunate that we have statements based on so little real knowledge but resting wholly on opinion or on a limited experience. If we would all be better off by defecating three times a day we certainly ought to be doing so.

In no field of physiology (normal and pathological) are we more lacking in knowledge than in that of what actually takes place in the course of the passage of food through the alimentary tract, and yet no ailments are nearly so common as those which have to do, directly or indirectly, with dyspepsia. It was not until recently that we had much knowledge of the time which it takes food in general to pass through various sections of the digestive tract, and, in fact, we know nearly nothing yet as to the time of passage, or what really occurs in the handling, of individual foods. It has long been known that there is a selection of foods in the stomach—that certain things are held for an hour or two longer than others, but we do not know about selection which may occur farther on. We cannot tell a patient whether it is the handling of the food of his supper, dinner, or breakfast which has gone wrong, or even if it was the meal of the day before which has been making trouble for him.

It is to be hoped that more thorough investigations will be made along these lines, for there is promise of blessing to a host of mortals through such studies and it is not impossible that the origin of many diseases which seem unrelated to these daily disturbances that make life miserable though they do not kill, will be cleared up.

In the meanwhile most of us will hardly find time for those three movements of an organ which was developed for the purpose of serving as a receptacle which might be emptied at convenience and on natural inclination.

LO! THE POOR MALE!

If there has been one thing on which man has congratulated himself as being superior to women, it has been on the matter of clothing. A generation, even a decade, since, it would never have been dreamed that he could ever have been recommended, and that by members of his own sex, to follow the example of his sister in his habiliments. The unexpected has happened, however, and women, if we can trust our autocritics, now lead in the hygiene of clothing. Strange to say, they have done this by their own unclothing or by gestures in that direction.

Here cometh a German physician, E. Friedberger, who urges fervently that man reform, especially in his summer clothing, and follow the example in rational garmentage recently given by women; and an English physiologist, Leonard Hill, would have us cast aside the close collar and long trousers, emulate the low blouses, short skirts and artificial silk stockings of girls, and so let in more light, especially ultraviolet light, which is said (and we can well believe it) to penetrate such gauzy nether attire. Since it is only by superior health and vigor that man can hope to regain his supremacy, or keep what little ground remains, it is high time he was following the advice of these farseeing gentlemen.

We still have one point of vantage, however, or rather women, even young women, still have a handicap which lends encouragement to the opposite sex, for if we can trust the argument of a noted exponent of physical education, they are wearing one article of apparel which impedes their progress to complete dominance. This gentleman, speaking of bad posture in school girls, blames much of it on the brassiere which, he asserts, forces the breasts down and often causes serious deformities. Maybe it does, but we alway supposed it supported the breast and had, if any, an effect for good upon posture. We will leave it for the reader to judge. Happily man is not much in need of this particular harness and it is not likely he will ever add this to other causes of his growing inferiority complex.

The brassiere probably makes for good posture rather than bad, but if it is ever proved to be in the least a handicap, we are sure that woman, in her present mood, will fling it aside.

There is one feature in regard to clothing in which we might imitate and emulate the ladies and that is in the wearing of colors. We display a small splotch under our chins, but that is as far as we have gone in this direction. Our ancestors from a century ago and back into earliest historic times loved color and seemed happier and healthier in mind than we, the wearers of black and grey, who make so drab and melancholy a mess of life.

THE TEETH OF ABORIGINES

The teeth of the Egyptians of pyramid building days show in their mummies an extensive amount of disease. And, according to Keith, such disease is to be found in the remains of very early man, though these remains are so few as to give us no notion of the frequency of dental pathology. It is interesting to learn that some tribes of American Indians of the earlier periods who had not adopted the ways of their white conquerors were very superior to them in the way of their teeth. There are Indians and Indians, however, and some tribes were far better in this respect than others.

The investigation was made by R. W. Leigh, a dental surgeon, captain in the Dental Corps, U. S. A., and associate professor in the Georgetown University Dental School, of the condition of teeth in the skulls of the following Indians: Algonquins in Kentucky; Sioux; Arikara and Zuni.

The Algonquins were a sedentary people who lived by hunting and fishing and gardening. Maize, squashes, and probably beans, with fruit, formed their chief diet. The tribe had probably never been in contact with Europeans.

The Sioux were nomads and nearly wholly meat-eaters, chiefly of bison. The wild cherry, plum, strawberry, and prairie turnip were used to some extent. They were of fine physique. Their mode of life had not been affected by the white intruder.

The Arikara were semisedentary, raising beans, corn, and squashes. They also ate meat (bison) and fish.

The Zuni were a sedentary agricultural people, living in communal buildings. Their diet was largely vegetarian and meat formed only a small part of their diet. Their diet and mode of life was most nearly related to our own.

In the first group the dental arches were well developed. The "dental characteristics of the Sioux elicit considerable admiration," the teeth being large, well formed and even free from developmental or acquired disease. The teeth of the Arikara resembled those of the Sioux. In the Zuni skulls the "denture is the smallest and least perfect of any of these tribes."

Attrition or wearing away of the hard parts of the teeth was remarkably frequent in the Algonquin skulls, probably from chewing maize mixed with the particles of stone on which it was ground. The teeth of the Sioux showed little wear until after fifty years of age.

Caries was infrequent in the Algonquin. There were only twenty-eight small lesions in thirty per cent. of skulls. These were all in persons well advanced in life. The Sioux were least susceptible; in ninety-two crania "there were but ten with carious lesions, most of which were quite simple." There was but one alveolar abscess. Twenty-eight per cent. of the Arikara showed caries and in the Zuni skulls there was seventy-five per cent. Many teeth were lost early in life in this latter group which is in contrast with the others.

The Sioux seem to have been freer from peridonclasia (pyorrhea) and periapical lesions were less common, though they existed in sixteen per cent. of the skulls of these Indians.

THE MODERN NOVEL AS AN INDEX OF THE PUBLIC MIND

If one is to take at their face value the best sellers of today, the conclusion must inevitably be reached that the mind of modern man is a pretty rotten affair. Pornographic heroes and lewd heroines strut through the pages mouthing empty banalities about freedom from the old bondage. Greasy philosophers whose main object in life seems to be living at the expense of someone else, utter weird conclusions about existence untrammelled by the dictates of decency. Chastity, if one is to believe these books, has ceased to exist except in the aged and repulsive, morality is no longer smart, and real honesty a handicap to the genuine expansion of the soul. The modern girl is pictured as a sort of a cross between a courtesan and a Parisian fishwife forever screaming *a la lanterne* for all of the clean and noble things of life. Nowadays it isn't smart to read good, clean books and as a result a sort of cubist literature devoid of punctuation and filled with ghastly inaccurate pictures of life crowd the book stalls.

To the thinking person, especially if he has any interest in public psychology, all of this presents an interesting problem. The practitioner of medicine wonders what effect these mental distortions are having on the psychology of his clientele, and the public health worker is led to ponder over the effect

this has upon the spread of venereal infections and the insanity rate. If these books are to be believed, the world is making a direct onslaught on chastity, the cornerstone of civilization, and a decadence of the human race has set in.

It is hard to believe that such a condition of affairs exists. Victorian prudery has gone by the board and perhaps the very knowledge which the young people of today are getting may be the means of combating a great many practices which have hitherto influenced badly the health of the race. In every age there has always been a number of salacious cults whose stock in trade has been sheer nastiness, but such people have never been in the majority and have never very greatly influenced the thought and action of their time. The pure of heart, the restrained in action and the conservative in morals have, in the end, always dominated.

It is interesting to speculate as to the cause of this casting away of restraint. If we are to take Mr. H. G. Wells' latest book, *Christina Alberta's Father,* as an allegory, the world is like Mr. Preemby, who married into the laundry business and was utterly repressed for twenty years by a wife whose fear of her own sin made her brutally apprehensive lest her mate might sin also. Upon her death her husband, thus rid of all his inhibitions, expands his daydreams to a point at which he imagines that he is the king of the world. Fortunately his introspection remains and before his death he recognizes that his dream is but a phantasm. The explosion of the war shattered many of the world's inhibitions and perhaps man is but dreaming for a while that he is king of the world. Fortunately for him, much of this insight still remains and he will find his way back to sobriety, decency and selfcontrol.

NAMING THE BONES

Humanity, even that portion of it which prides itself on being "scientific," is prone to follow a course of conduct which it deems wise for a season —often a protracted season—and then suddenly to reverse its judgment as to the wisdom of its past practice. If there is ample reason why it should thus change its mind, it certainly should do so, for consistency in following a wrong course is far from being a virtue; but the exhibition of such weathercockishness should make us humble with regard to any human judgment and cause us to question whether the newly adopted and perhaps diametrically opposite course is altogether right or any more certain of leading us where we wish to arrive than was the one we have just forsaken.

For years considerable time and pains were employed in teaching children the "names of the bones" and, incidentally the names of less evident parts of the human anatomy together with some facts or opinions as to how the organs were made and what they were made for. Just at present the "naming of the bones" is frowned upon as being of no consequence for the reason that the information conveyed has little influence in improving the health of the child. With the veering of the course of the ship of education the tendency is to throw overboard any oldfashioned instruction in the make up and working of the human machine.

This change of policy has been the result of a new attitude toward, and the adoption of, better methods in handling hygiene, and we are prepared to admit that mere information about physiology, no matter to what extent it may be acquired, may have no effect whatsoever in affecting the health of the student, just as a course in ethics may leave him no better in his general conduct. It is certainly possible to know all that is known about the bodily machine and even about the laws of hygiene and yet to put none of this knowledge in practice though one may question whether such knowledge does not have some effect for good. On the other hand, it is possible to be abundantly healthy without any book knowledge of these subjects or any teaching by the schools. The wild animal does not know the names of the bones and he could not tell a carbohydrate from the cerebellum by name, nevertheless he is better at practising health habits than his wiser cousins who go to school to school teachers. He has his teacher, it is true, and Nature is a firm disciplinarian but he knows no names, nor can he enumerate the health habits which he practises.

Since the days of Adam the naming of things has been an important business of man. In fact it seems to have been the sole occupation of our first parent. And when man has named a thing or learned its already given title he "knows it" or thinks he knows it. We see a new flower about which we are curious until we have learned that it is an "orchid"—but having learned this, we "know it" and are content. We hear of a new planet and having heard what it is "called" we speak of it familiarly. Our books and our libraries are made up chiefly of names. Writing to his imaginary friend in Persia, Montesquieu remarked of the libraries of Paris that he had discovered many huge volumes on the subject of medicine made up chiefly of long names which "neither cure the patient of his ills nor relieve the physician of his ignorance."

Education in the ordinary sense of the word—"mental education" (if we can any longer pigeonhole this functioning of nerves, muscles and sense organs) —consists chiefly in the learning of the names of things and acquiring information about the things

named. Since there are so many objects to be thus "studied" it behooves the educator to make a choice of those to be studied—of the things, the names of which are to be learned in school. There are the stars and planets; the continents and oceans; the countries and cities; the emperors of Rome and the kings of England; the great generals and the great statesmen; the great writers and the great artists; the great books and great pictures; the names of the animals of the arctics and tropics; the exports of Brazil and the products of California. But all we have mentioned could be learned in a few days and the teacher must go into details.

Opening at random a high school textbook on history, we find the following words: "Pericles favored a policy of hostility towards Sparta, and induced the people to construct two long walls from Athens down to the shore so that they could reach the port of the Piraeus without damage from a besieging army." Doubtless this is very important or was to the author, but some of the things named are a long way off in time and space.

A textbook on science tells that "water, as it passes through the air, absorbs a small amount of carbon dioxide gas, making weak carbonic acid" (very weak indeed. If it were only strong enough for "soda water"!). There are pages about engines with enumeration and descriptions of cylinders, piston rods, accentrics, valves, gears, etc. There happens, also in this particular book (what is besides the point) the statement that "a strong constitution is the most effective barrier again disease germs," which is, unfortunately, untrue. George Washington prided himself on his strong constitution, but he was successfully attacked by disease germs about as many times as any one could be and survive, and he was finally carried off prematurely by an attack of quinsy. Had Roosevelt been immune to malaria and other infections he would doubtless be living today. This book was written by a professor of chemistry. But we are straying from our topic.

Opening the most attractive covers of a new geography (in education we are always viewing if not "new" heavens, at least "new" earths) we find that the pupil is expected to inform himself as follows: "In the silvas most of the animals are adapted for living on trees, and hence, with the exception of the tapir, jaguar, anteating bear, and boaconstrictor, they are rather small. Among the smaller animals are peccaries and anteaters." Certainly no place to hunt big game.

Now we may be mistaken but it seems to us that, both in time and place, man ought to be most concerned with the things nearest at hand and most vital to his well being; and we are certain that our bones are very intimate objects and that they are very essential for our well being, and since all of our knowledge of things consists, originally, in learning their names we believe the names of the bones better worth learning than the doings of the Athenians or the amount of carbon dioxide in the air or the sort of animals to be seen in South America. But bones, as we living things have them, are not dead things, and they inspire devious inquiry as to where they came from? What limits their growth? The purpose of their various humps and hollows? What is going on inside them? and other fascinating questions. One query, What are they "made of?" opens at once a chapter in chemistry of the utmost importance in future parenthood since from ignorance on the subject a considerable percentage of present day offspring are affected by rickets, a disease due to ignorance of the materials for the making of bones. In really "naming the bones," with the help of someone who knows them we begin to appreciate the miracle of our own bodies and we may come to exclaim with Sir Thomas Browne, "We carry with us the wonders we seek without us; there is all Africa and her prodigies in us; we are that bold and adventurous piece of Nature, which he that studies learns in a compendium what others labor at in a divided piece an dendless volume."

The study of the human body would seem to stand first in importance among all possible subjects and for practical importance, for it still remains the informational basis of hygiene. Besides, there are a great many who agree with Spencer that "for discipline as well as for guidance, science is of chiefest value," and this science comes nearest home.

In the general study of the human body the bones (using the word specifically) are an excellent starting point. Oliver Wendell Holmes when teacher of anatomy expressed himself as enjoying the "dry parts" but not the "wet parts" of his subject and, with the exception of a few enthusiasts who exclaim over "beautiful specimens" of liver or lights, most of us have, at all ages, an aversion to exhibition of the soft tissues of the human machine. A skeleton or a piece of it, is not disagreeable nor forbidding, on at least second acquaintance, and, while dry in one sense, it contains the gist of all the fascinating story of the human organism from its one celled beginning. A mighty monster of antiquity can be reconstructed by the cunning paleontologist from a single bone and a capable teacher can do as much and more for the human body in an appeal to a class through a bone of one of their own species.

It was the opinion of Melanchthon that "it is disgraceful for a man not to know the structure and composition of his own body," and it might appear that while we are learning the names of everything else under the sun, often in more than one language,

we should give adequate time and attention to the naming of the bones. In fact it would seem as if one of the most certain tests of intelligence should be the extent of our knowledge of the machinery and management of our own bodies.

Obituary.

RICHARD HICKMAN HARTE, M.D.

Philadelphia

News reached New York on November 15th of the death in Vicksburg, Miss., on the previous day of Dr. Richard Hickman Harte, a well known surgeon of Philadelphia.

Dr. Harte was born in Rock Island, Ill., on October 23, 1855. He received his degree in medicine from the University of Pennsylvania in 1878, and subsequently spent several years abroad continuing his professional studies in the hospitals of European cities. Upon his return to this country, he was made assistant demonstrator of surgery at Pennsylvania. Among other positions and posts of honor held by him were those of emeritus surgeon, Pennsylvania Hospital; consulting surgeon at St. Mary's Hospital, St. Timothy's Hospital, Bryn Mawr and Abingdon Hospitals; adjunct professor of surgery at the University of Pennsylvania, former director of Public Health and Charities in Philadelphia, former president of the American Surgical Association, of the College of Physicians and Surgeons, Philadelphia, and of the Philadelphia Academy of Surgeons, fellow of the American College of Surgeons, and of the *Société Internationale de Chirurgie*. For many years he was editor of the Transactions of the American Surgical Association. He was the author of the *Handbook of Local Therapeutics*, and made many contributions to various journals.

Dr. Harte served as surgeon with an ambulance corps in 1918 in Paris, and organized Base Hospital Unit No. 10 and went overseas as its commander. He was mentioned in the dispatches of General Haig and received the British Order of St. George and St. Michael, and the Belgian Order of King Leopold bestowed for special service rendered during the war. Ireland made him a fellow of its Royal College of Surgeons for conspicuous service to the British forces.

LUNCHEON IN HONOR OF SIR ARBUTHNOT LANE

On Wednesday, November 25th, a luncheon in honor of Sir William Arbuthnot Lane, the well known British surgeon, was given by Dr. William Seaman Bainbridge, of New York, at the Union League Club. There were present sixty-five physicians and surgeons.

In introducing Sir Arbuthnot Lane, Dr. Bainbridge, who acted as toastmaster, referred to the fact that he had known the London surgeon for more than twenty years and at about that many years ago had given a dinner in his honor on the occasion of one of his first visits to New York. Dr. Bainbridge also drew attention to the originality as a surgeon of his guest, pointing out that he was essentially a blazer of the trail. Many years ago he devised a new method of doing a mastoid operation and was the pioneer in plating fractures, besides showing the way in other surgical procedures.

Sir Arbuthnot Lane then presented his views on chronic intestinal stasis, declaring that the majority of diseases with which mankind was afflicted were preventable, and of such preventable disorders intestinal stasis was the most common. He insisted that it was a disease of civilization from which primitive races were free and that civilization was menaced by it. Indeed, the populations of civilized countries were destined to die from chronic diseases and cancer unless the gospel of health, good food, good habits, good air and exercise, could be successfully promulgated.

He then outlined the objects of a new association in England, the New Health Society, which is being organized and over the first meeting of which in London he is to preside on December 11th. Its members are politicians, research workers, and some of the leaders of medicine and science. The objects of the New Health Society are: 1, To spread the knowledge of the newer discoveries of science which concern the preservation of health and the prevention of disease; 2, to teach the advantages of right food, fresh air, sunshine and exercise through the medium of newspapers, pamphlets, books, wireless and lectures; 3, to cooperate with local authorities, schools, churches, medical officers of health, trade unions, nurses' and other women's organizations, welfare centres and every other available agency; 4, to influence caterers and heads of schools, colleges and other institutions to provide pure, natural and unspoilt food; 5, to secure improvement in the quality and supply of milk, fruit, vegetables, bread and other foods by urging the best methods of production, storage and distribution; 6, to prevent profiteering in food, and to improve and cheapen transport in order to reduce food prices; 7, to adopt every available means for preventing the contamination and adulteration of food and to promote legislation for this purpose.

At the conclusion of Sir Arbuthnot Lane's address a resolution expressing sympathy with and support of the new society's aims was proposed and carried.

United States Senator Royal Copeland spoke of the most enthusiastic terms of the objects of the new society and said that he would use his utmost endeavors to have a similar scheme adopted here. He pointed out the pressing need for the education of the masses in all concerning disease and especially in the prevention of the same. Dr. Robert T. Morris, Dr. William B. Coley, and Dr. Charles H. Chetwood also spoke briefly. Several physicians present suggested that the aims of the Gorgas Memorial were similar to those of the new society.

Among those present were: Dr. A. Judson Quimby, Dr. Edward Kellogg, Dr. J. M. Lynch, Dr. Anthony Bassler, Dr. William Sharpe, Dr. J. Eastman Sheehan, Dr. I. Bern Hirsch, Dr. Asa B. Davis, Dr. Erastus Mead Hudson, Dr. Henry W. Freudenthal, Dr. W. Hall Hawkins, Dr. Gregory Stragnell, Dr. M. W. Thewlis, Dr. William H. Newcomb, Dr. Louis Faugères Bishop, Dr. F. M. Jeffries, Dr. H. Dawson Furniss, Dr. Joseph F. Saphir, Dr. A. J. Rongy, Dr. James N. West, Dr. Lewis Gregory Cole, and Dr. Ross McPherson.

News Items.

Psychiatric Clinic.—Northwestern University, at Evanston, Ill., is supervising a free clinic for mental and behavior disorders, as a branch of the clinic in Chicago. Dr. Herman Adler, director of the Institute of Juvenile Research, will provide a psychiatrist for the clinic.

Hygiene in Cotton Mills.—The Public Health Service is undertaking a study of hygienic conditions in and around the cotton mills of Greenville, South Carolina, and that vicinity. The work is planned to extend over a two year period.

Medicine in Germany.—A warning against taking up the study of medicine for the next few years, on account of precarious returns for the expense of training, has been issued by the Prussian state authorities. This action, however, is stated by the *Klinische Wochenschrift* to be sponsored by the officers of the organized medical syndicates.

Resolutions on Health Officers.—The Chicago Medical Society has adopted resolutions against the appointment of laymen holding a D.P.H. degree as health officers instead of physicians holding an M.D. degree; the action mainly directed against the American Public Health Association, at whose annual meeting in St. Louis a paper was read favoring such appointments of laymen.

Gifts to University of Chicago.—A grant of $10,300 has been received from the National Research Council for studies on the biology of sex. There have also been received gifts of $3,000 from the National Tuberculosis Association for the study of nutrition of the tubercle bacillus; and $2,500 from the Carnegie Corporation, through the American Association of Museums, for a psychological study of museum fatigue.

Medical Study Tour to Europe.—The Travel Study Club of American Physicians, which was founded at the International Medical Congress at London, in 1913, is arranging a 1926 Study Tour to Oslo (Christiania), Stockholm, Copenhagen, Hamburg, (optional to Berlin and Munich), Cologne, Wiesbaden, Heidelberg, Strasbourg, Berne, Zurich, Leysin, Geneva, Paris and London. Dr. Louis L. Seaman, of New York, is president; Dr. Fred H. Albee, of New York; Dr. Edward B. Heckel, of Pittsburgh; Dr. John P. Lord, of Omaha, vice-presidents. Physicians of good standing are welcome to participate in this Study Tour to the limit of fifty, and for information should address the secretary, Dr. Richard Kovacs, 223 East 68th Street, New York City.

Hospital News.—A mass meeting was held by citizens in the locality, demanding the reopening of the old Williamsburg Hospital, of Brooklyn; an accounting of the endowment fund was also asked for.

St. Vincent's Hospital of New York, is planning a campaign to raise one million dollars.

The Wyckoff Heights Hospital, New York, is opening four new clinics—pediatrics, diabetes, dermatology, and obstetrics and gynecology.

A campaign was begun November 21st, by the New Rochelle Hospital, New Rochelle, New York, to raise $1,000,000 for expansion of the institution.

It is reported that the Henry Ford Hospital, of Detroit, has abandoned the flat rate system of charging for treatment. The new arrangement provides surgical fees up to $1,000, and medical charges up to $70 a week. A deficit of over two million dollars has arisen.

The University Hospital, of the University of Michigan, Ann Arbor, was dedicated November 19th, to 21st. Speakers at the formal exercises included Dr. Victor C. Vaughan, of Washington, D. C.; Dr. William J. Mayo, of Rochester, and Dr. William S. Thayer, of Baltimore. Clinics were held in the different departments of the hospital. Doctor Mayo also delivered the annual Mayo lecture, his subject being Splenic Syndromes.

Mr. John E. Ransom, superintendent of Michael Reese Dispensary, Chicago, has resigned.

The City Hospital of Indianapolis is to build a new surgical unit, at a cost of about $200,000.

The Nassau County Sanatorium, Farmingdale, New York, has started work on a building for seventy children, at a cost of $250,000.

The University of Virginia Hospital, Charlottesville, has opened a new clinic building. A child welfare clinic will be conducted with funds secured from the Commonwealth Fund, private contributions, and the University Hospital League.

Lister Ward Preserved.—The firm of Burroughs Wellcome have rebuilt in London the Lister Ward of the Glasgow Infirmary, which was dismantled a year ago.

Doctor Abel Honored.—Dr. John J. Abel, professor of pharmacology at Johns Hopkins Medical School, has received a reward of $2,500 for outstanding contributions to science, from the Research Corporation of New York.

Professor Bechtereff Honored.—The fortieth year of the scientific activity Professor Bechtereff of Leningrad, Russia, will receive official celebration on December 20th. Scientific material is being collected for publication in honor of the anniversary.

Medical Women's Scholarship Fund.—The Medical Women's National Association report that at present there are four young women studying medicine on scholarships provided by the association, two at school in Boston, one in New York, and one in Philadelphia.

Speech Training Clinic.—Dr. John A. Glassburg and Mrs. Edward Scripture of New York are in charge of special courses in speech training and the correction of speech defects, to be conducted free of cost at Greenwich House, a settlement in New York. The classes meet Monday from four to six.

Wellcome Medal Awarded.—The Wellcome Gold Medal for 1925 was awarded by the Association of Military Surgeons to Lieut. Col. Albert C. Carlton of San Francisco, for his essay on means and policies which will best enable this association to increase its membership and accomplish its patriotic objects as stated in its constitution.

Army Death Rate.—The general death rate in the U. S. Army for 1924 is computed at 3.83 per thousand, compared with 3.91 for the preceding year, the first time the rate fell below four per thousand. The death rate for disease in 1924 was 1.94 per thousand, the first time it has fallen below two per thousand. Suicide held first place as cause of death; tuberculosis, second; automobile accidents, third; and balloon and airplane accidents, fourth.

Regional Consultants in New York State.—The State Department of Health has appointed Dr. George Kosmak and Dr. Frederick W. Rice, both of New York city, regional consultants in obstetrics; and Dr. William J. Orr, of Buffalo, Dr. Arthur W. Benson, of Troy, and Dr. Hugh Chaplin, Dr. G. W. Graves, Dr. W. R. May, and Dr. Herbert Wilcox, all of New York, as regional consultants in pediatrics. The appointments are made in order to provide lectures and clinics in the postgraduate work being carried on by the medical society and the department of health of the State.

Personal.—Dr. Seymour Basch has been appointed clinical professor of gastroenterology to the Polyclinic Hospital of New York.

The joint annual meeting of the Newburgh and Poughkeepsie Medical Societies was held at Newburgh on November 17th. Dr. Smith Ely Jelliffe, of New York, gave an address on Psychoanalysis and Organic Disease.

Dr. Wilfred M. Post is visiting in New York City. Doctor Post is chief surgeon of the American Hospital of Constantinople.

Dr. Dean Lewis has been appointed professor of surgery at Johns Hopkins Medical School, and surgeon in chief to the Johns Hopkins Hospital.

Dr. Errett C. Albritton of Buffalo, New York, has been appointed professor of physiology at Chulalongkorn University of Bangkok, Siam.

Dr. Walter T. Dannreuther, professor of gynecology at the New York Post-Graduate Medical School and Hospital, was guest of honor at a dinner given recently. Dr. Charles Gordon Heyd presided, and Dr. John O. Polak and Dr. Samuel W. Bandler gave addresses.

Dr. Howard Fox has been appointed professor of dermatology and syphilology at the New York University Medical College, succeeding the late Dr. William B. Trimble.

Dr. Hideyo Noguchi of the Rockefeller Institute has received the honorary degree of doctor from the University of the Sorbonne, Paris.

Dr. Oliver R. Avison, president of the Severence Union Medical College of Korea, is visiting in New York. Doctor Avison originated a medical language in Korean, and translated *Gray's Anatomy* for his students.

Dr. Louis M. Warfield, formerly head of the department of medicine of the medical school of the University of Michigan, has located in Milwaukee.

Society News and Notes.

The Massachusetts Society for Mental Hygiene is sponsoring a course of fifteen practical lectures on the mental health of children being given at Boston University School of Education. J. Mace Andress, Ph.D., is director of the course, and one of the lecturers. Others are Dr. Douglas A. Thom, Dr. Karl M. Bowman, Dr. Ransome A. Greene, Dr. John D. McCarthy, Dr. Marianna Taylor, Dr. Abraham Myerson, Dr. Henry B. Elkind, Prof. Ernest R. Groves, Augusta F. Bronner, Ph.D., and John M. Brewer, Ph.D.

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On the afternoon of Tuesday, December 22d, at four o'clock, Augusta F. Bronner, Ph.D., of the Judge Baker Foundation, Boston, will deliver a lecture at the New York Academy of Medicine on Juvenile Delinquency and Mental Hygiene. This lecture is one of the course being given at the academy under the auspices of the National Committee for Mental Hygiene, the New York State Committee on Mental Hygiene, and the New York Neurological Institute. On the afternoon of January 5, 1926, Dr. Arthur H. Ruggles, of Yale University, will speak for the same course on the subject, Mental Hygiene as a Preparation for College Life.

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At the annual conference the latter part of October of the General Council of the United Kingdom Alliance of Great Britain held in Manchester, local option was advocated as the shortest way to reach prohibition, according to the *Manchester Guardian Weekly*. Mr. Leif Jones presiding, declared that there is now a more widespread interest in the temperance question than for many years past. On the other hand, the drink bill was rising, and he feared that with a revival of industry it might again reach the figure at which it stood the year after the war. Sir George Paish, who moved a resolution declaring that in view of the economic and financial position of the country, the suppression of the drink traffic would contribute greatly to national wellbeing, delivered a serious warning as to the shortage of world's food supply.

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The Baltimore Medical Club of New York City held its semiannual dinner at the Waldorf Astoria on the evening of Saturday, December 5th. The address of the occasion was made by Dr. Lewellys F. Barker, of Johns Hopkins.

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The regular monthly conference of the New York City Cancer Institute was held on November 27th. The discussion related to cases presenting intraperitoneal radium insertion, including carcinoma of the breast, the tongue, and the bladder; and intratumoral insertion of radium emanation and surgery in cancer.

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The New York Electrotherapeutic Society met on December 2d at the New York Academy of Medicine. Dr. M. A. Lyons and Dr. Herman Goodman presented cases, and case reports were given by Dr. Sinclair Tousey, Dr. Victor C. Pedersen and Dr. Frank T. Woodbury.

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The New York Society for Thoracic Surgery held its semiannual meeting the evening of Tuesday, November 24th, in the New York Academy of Medicine building. Patients were presented by Dr. Howard Lilienthal, Dr. Willy Meyer, and Dr. Harold Neuhof; case reports were given by Dr. Hermann Fischer and Dr. Ethan F. Butler; röntgenograms were shown by Dr. Franz Torek, Dr. Leon T. Le Wald, and Dr. Harold Neuhof.

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The stated meeting of the New York Academy of Medicine was held in cooperation with the Section of Medicine on the evening of Thursday, December 3d. A symposium was held on the liver and gallbladder, in which Dr. Philip D. McMaster discussed the significance of urobilin; Dr. George B. Eusterman, of the Mayo Clinic, the present status of chronic cholecystic disease, and practical aspects of studies in liver function; and Dr. Lewis Gregory Cole the x ray of gallbladder lesions.

Other meetings at the academy were those of the Section of Dermatology and Syphilis, on December 1st, when cases were presented from Cornell University Medical College Clinic and from the syphilis clinic of Bellevue Hospital; the Section of Surgery on December 4th, when papers were read by Dr. Howard Lilienthal on Rubber Dam in Abdominal Surgery, and by Dr. Henry H. Ritter on Fracture about the Elbow Joint; the Section of Neurology and Psychiatry made its meeting on December 8th a memorial to Charcot, in cooperation with the New York Neurological Society. Lieutenant Colonel Fielding H. Garrison, of Washington, D. C., gave an interesting talk illustrated with slides and other exhibits on Charcot and the Salpétrière; Dr. M. Allen Starr spoke on the Charcot centennial in Paris; Dr. Charles Loomis Dana read a paper on Charcot and the Arts; and Dr. Bernard Sachs one on Charcot the Hypnotist and Diagnostician. The Section of Pedriatics met on December 10th, when a case of polymyositis was presented by Dr. Sara Welt-Kakels, and papers read by Dr. Bret Ratner, Holmes C. Jackson, Ph.D., Dr. Helen Lee Gruehl, and Dr. Robert A. Cooke. The Section of Otology met on December 11th, when a case of chronic mastoiditis was presented by Dr. Mark J. Gottlieb, and Harry A. Goalwin read a paper on the X Ray Diagnosis of Diseases of the Petrous Pyramid.

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Dr. Vittorio Putti, professor of orthopedic surgery at the University of Bologna, delivered an address on the University of Bologna in the History of Medicine at a joint meeting of the Association of Italian Physicians of America and the Italian Brooklyn Medical Society on the evening of Saturday, December 5th, at the New York Academy of Medicine.

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The ninth lecture in the practical lecture series being offered by the Medical Society of the County of Kings was given on December 4th by Dr. William H. Lohman. His subject was the Management of Pneumonia and Its Complications.

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The Alumni of the Hospital for the Relief of the Ruptured and Crippled, New York City, held their eleventh reunion on November 23d and 24th. In addition to special clinics arranged for the occasion, the program included the following addresses: Recurrent Dislocations of the Shoulder, by Dr. T. Turner Thomas; Pathology of Joint Tuberculosis in Its Early Stages, by Dr. Allen De F. Smith; Cases Illustrating Traumatic Origin of Bone Sarcoma, by Dr. William B. Coley; Critical Comments on Various Types of Stabilizing Operations on Feet, by Dr. Royal Whitman; Use of Lipiodol in the Diagnosis of Obstructive Lesions of the Spinal Cord, by Dr. William Sharpe; A Modified Hey Groves Operation for Reconstruction of the Anterior Crucial Ligament of the Knee, by Dr. Arthur Krida.

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Among prominent visitors in New York during the past few weeks have been Dr. Lorant Hellebranth, of Budapest; Sir Bertram Dawson, physician to the King of England and chief physician to London Hospital; Dr. Kathleen Lynn, of St. Ultan's Baby Hospital in Dublin, Ireland; and Dr. Wilfred M. Post, chief surgeon of the American Hospital in Constantinople.

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Under the auspices of the American Stomatological Association, a series of courses is being offered to licensed physicians and dentists, with a view to better training of the profession in affections of the teeth. The list of courses follows: Stomatological Bacteriology, under the direction of Dr. William H. Park and Dr. Charles Krumwiede; Diagnosis and Focal Infections, Dr. George Reese Satterlee, Dr. Homer E. Smith, Dr. George A. Wyeth, and others; Stomatological Hygiene, Dr. Alfred J. Asgis, and Dr. E. B. Hardisty; Dietetics in Stomatologic Practice, Holmes C. Jackson, Ph.D.; Clinical Dietetics, Dr. Robert H. Rose. Clinical and laboratory courses will be given at Fordham Hospital, University and Bellevue Medical College, Medical Laboratories, Midtown Hospital, and elsewhere. Information may be obtained from the Director of Classes, Aeolian Hall, 33 West Forty-second Street, New York.

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Although as yet no official announcement has been made, it has been widely reported in the European press that an exhaustive investigation of sleeping sickness in Equatorial Africa will be made by the League of Nations in cooperation with prominent medical societies and other scientific organizations and institutions. It is reported that Great Britain has donated more than $15,000 and the use of the

government laboratory at Uganda; that France and Belgium have collectively donated 150,000 francs and Spain 5,000 pesetas for the cause.

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Dr. George B. Eusterman of the Mayo Clinic, Rochester, Minn., held Dr. Ludwig Kast's clinic at the Post-Graduate Hospital, New York, on Friday, December 4th. His subject was Newer Clinical Aspects of Gastric Cancer.

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The Bureau of Clinical Information of the New York Academy of Medicine has on file and for distribution to all interested full information about postgraduate study, not only in New York City, but in foreign institutions. This information will be furnished gladly upon application at headquarters, 17 West Forty-third Street, or by request over the telephone.

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The New York Physicians' Association held a meeting on the evening of Wednesday, November 25th, at the Chemists' Club, New York. Dr. Arthur A. Landsman presented a case of congenital caudal appendage of the sacral region, and the papers of the evening were read by Dr. A. S. Maclaire and Dr. William Sharpe. Their subjects were, respectively, Symptoms and Signs of Proven Acute Cases of Intracranial Hemorrhage in the Newborn, with lantern slides; and Intracranial Hemorrhage in the Newborn, Acute and Chronic Conditions.

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Dr. Horace W. Pike, director of psychiatry at the Danville, Pa., State Hospital for the Insane, delivered a lecture on psychopathic traits in children and their early detection before the convention of the Western New York Teachers on November 20th in Buffalo.

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Dr. Fernando Luz, of Bahia, Brazil, who has been in this country for several months doing postgraduate work, will return to South America on December 15th.

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The Brooklyn Society of Internal Medicine met on November 27th. The program included a case report by Dr. Joshua M. Van Cott, and a paper on Sporadic Paratyphoid Fever by Dr. Luther F. Warren.

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The Clinical Society of the Jewish Memorial Hospital held a regular meeting on December 1st. The speakers included Dr. E. Hoenig, Dr. Mark Hornstein, Dr. Frank Horn, Dr. H. Krauskopf and Dr. J. F. Montague.

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At the recent annual dinner of the British National Institute of Industrial Psychology, the president, the Earl of Balfour, gave an interesting account of the activities of the institute. He characterized its work as a survey of "that vast realm covered by the operation of the factory acts; it is striving to introduce into that realm improvements in mental and bodily conditions of work whtich are within the power of the masters and men to arrange for themselves, and bring into being and put into execution, a study of such things as lighting, heating, ventilation, the movements of the body, cultivation of interest, the avoidance of fatigue, and occupational guidance—in other words, the study of the whole human factor in relation to the machine and the job."

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The American Society of Regional Anesthesia held a meeting on December 1st at the New York Academy of Medicine. The subject of the meeting was Clinical and Experimental Investigations in Spinal Anesthesia, illustrated with lantern slides and hydrostatic apparatus, by Dr. John O. Bower, Dr. George Wagoner, and Dr. J. H. Clark.

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At the meeting of the Dental Hygienists' Association at the New York Academy of Medicine on December 1st, Dr. Alfred J. Asgis addressed the society on the subject of Public Stomatology and Ulotropsis. Dr. Asgis spoke also before the Eastern Dental Society in Philadelphia on Pyorrhea Alveolaris, Dentoalveolar Stomatitis and Ulotropsis, at a meeting on December 3d.

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The New York State Medical Society and the State Department of Health, through the Division of Maternity, Infancy and Child Hygiene, are conducting a postgraduate medical education program consisting of clinics and lecture courses. To meet the increasing demand for these lectures and clinics, according to *Health News*, Dr. Matthias Nicoll, Jr., State Commissioner of Health, has appointed Dr. George Kosmak and Dr. Frederick W. Rice, of New York, as regional consultants in obstetrics, and Dr. William J. Orr, of Buffalo, Dr. Hugh Chaplin, Dr. G. W. Graves, Dr. W. R. May and Dr. Herbert Wilcox of New York, and Arthur W. Benson of Troy, as revional consultants in pediatrics.

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The eleventh conference of the National Committee for the Prevention of Blindness was held at the Russell Sage Foundation Building from November 30th to December 5th. On the first morning an institute for volunteer workers was held. In the afternoon a joint meeting of the American Museum of Safety and the National Committee discussed the subject of eye hazards in industrial occupations. On the following morning the subject for discussion was, How Can the National Committee for the Prevention of Blindness be of the greatest service, first, to state and local organizations for the prevention of blindness; and, second, to state and local organizations for those already blind, and having preventive departments. At a general session in the afternoon, the speakers included Miss Lydia Hayes, secretary of the New Jersey State Association for the Blind; Dr. B. Franklin Royer, medical director of the National Committee; and Mr. Charles Hayes, director of information and publicity of the American Foundation for the Blind. At four o'clock the meeting adjourned to attend a special meeting and demonstration arranged by the Department of Sight Saving Classes of the Board of Education of New York. That evening a dinner was held for the Special Committee on Research Problems in the prevention of blindness at the Pennsylvania Club. On December 2d there was a joint meeting of the Association on Indian Affairs and the National Committee to discuss the campaign against trachoma among the Indians. Afterwards there was a visit to the eye clinic for preschool children at 413 West Forty-sixth Street. On December 3d clinics, classes and local organizations were visited, and in the afternoon the annual meeting of the National Committee for the Prevention of Blindness was held. The chief speaker was Dr. William H. Wilmer, director of the William Holland Wilmer Foundation at Baltimore. This was followed by a dinner at the City Club for the Board of Directors, Advisory Council, and New York State Committee. On December 4th sight saving classes were visited, and round table discussions were held on various subjects of interest. On December 5th the Committee and its guests were invited to attend a demonstration of the latest developments in modern lighting arranged in their honor by the Edison Laboratories of Harrison, N. J.

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Following is the list of names of officers elected at the annual meeting on November 23d of the Medical Society of the County of New York: President, Dr. William P. Healy; first vice-president, Dr. Henry S. Patterson; second vice-president, Dr. John Douglas; secretary, Dr. Daniel S. Dougherty; assistant secretary, Dr. J. Milton Mabbott; treasurer, Dr. James Pedersen; assistant treasurer, Dr. Ten Eyck Elmendorf.

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Dr. Linsley R. Williams, of the National Tuberculosis Association, Henry J. Fisher, of the United Hospital Fund, and George J. Hecht of *Better Times* have been appointed by the New York Welfare Council a committee to consult with the social agencies of New York City to determine whether any of them wish to conduct their work in joint offices, with a view to thus making more efficient their common services.

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As one means of carrying its objects into effect, the Committee on Periodical Health Examination of the Medical Society of the County of New York has undertaken the observation of health examination work being done at the East Harlem Health Centre. . . . This experiment at the Centre offers local physicians a chance to perfect themselves in the performance of health examination along thorough, scientific lines. The Medical Society's committee is present to impart to those desiring to avail themselves of the opportunity the fruits of over two years' research and study in the field. The County Society was largely instrumental in initiating the preventive examination in the East Harlem Health Centre. As soon as the development of a corps of properly trained physicians has been made certain, the society will relinquish its responsibility in health center examinations.—*N. Y. Medical Week.*

Book Reviews

HEART DISEASE

Diseases of the Heart. By Sir James Mackenzie, F.R.S., M.D., F.R.C.P. Fourth Edition: London & New York: Oxford University Press, 1925. Pp. 496.

In this new edition of Mackenzie's classical treatise on heart disease there has been little change in fundamental clinical content. The book has, however, been completely recast and rewritten in the light of the well known concepts of disease which Mackenzie developed in his last years at the St. Andrews Institute for clinical research. Mackenzie's thesis is that hitherto medical research has not gone beyond the stage of recognizing a symptom or a reaction and giving it a name. He believed that the factors concerned in the production of symptoms might be discovered by studying the functions of living cells, and that the most important symptom referable to the heart—cardiac failure—must be studied from the same viewpoint. Much of the new matter in the book is an elaboration of these theories and is philosophical in nature, for it is the chief and avowed aim of the author to demonstrate the inadequacy of the present views. To the reviewer these newer theories are difficult to understand and do not seem to clarify and simplify the subject as much as Mackenzie had hoped, for it is essentially a vitalistic theory that he has adopted.

The most interesting thing in the book is Mackenzie's account of his own fundamental researches on the arrhythmias, and his description of the train of thought that led to so many important discoveries. There are vivid freshness, independence, and untrammeled thought in his writings rarely encountered in a textbook. His continued efforts to probe into the nature of disease, when burdened by advancing years and illness, are the best evidence of the rare power and energy of the man. It is hardly necessary to call attention to the valuable clinical content of the book, based on the author's wide clinical experience, and illuminated by his rare judgment and discrimination.

AN ENCYCLOPEDIC WORK ON TREATMENT

Index of Treatment. By Various Authors. Edited by Robert Hutchison, M.D., F.R.C.P., and James Sherren, C.B.E., F.R.C.S. Ninth Edition, Revised and Enlarged. New York: William Wood & Co., 1925. Pp. 1035.

Although the title would suggest a purely medical book of treatment, a considerable portion of the book is devoted to surgery. This book also has valuable chapters on the physical therapies (electrotherapeutics, heliotherapy, radiotherapeutics, etc.), and also has a chapter on health resorts. The medical and surgical diseases and diseased conditions are all arranged alphabetically, and the book, including the index, comprises 1035 pages.

A book of this character cannot be reviewed; the work is too encyclopedic. That this book, which lies between books on practice and books on surgery and a many volumed medical encyclopedia, fills a want is evidenced by the fact that this is the ninth edition since 1907. That each edition has been an improvement on the one before needs no proof, the list of contributors giving sufficient evidence that the therapeutic advice given is of the best.

An American criticsm would be directed towards many of the prescriptions given, as the American stomach now rebels against bad tasting liquids when active soluble tablets or capsules will act as well or better. Some of the drugs recommended are really obsolete, as zinc oxide by the mouth (page 223), silver nitrate by the mouth for chronic diarrhea in infants, and dilute hydrocyanic acid. A frequent menstruum suggested is chloroform water, which is very disagreeable to the majority of patients.

The ninth edition of this valuable book should meet with success.

MALIGNANCY

Die Klinik der bösartigen Geschwülste. II. Band. Brust- und Bauchorgane, Harn- und männlischer Geschlechtsapparat, Wirbelsäule und Extremitäten. Mit 267 Textabbildungen und 48 farbigen Tafeln. Leipzig: Verlag von S. Hirzel, 1925. Pp. xvi-740.

It has been shown recently that in Germany almost ten per cent. of 86,216 necropsies revealed a cancer; the number of sarcomas was 0.8 per cent. This large series of cases was used to illustrate the differences between clinical and necropsy diagnoses. Five per cent. of the diagnoses were incorrect as to the nature of the disease in cases of external cancer, and 3.26 were incorrect as to the location of the disease, making a total of 8.26 per cent. of false diagnoses. In the cases of cancer of the viscera, 17.35 per cent. were found to be wrong in regard to the nature of the disease and 15.09 per cent. were wrong as regards location, making a total of 32.44 per cent. of faulty diagnoses in the entire necropsy material. The sarcomas showed a wrong diagnosis in 43.23 per cent. of the sarcoma cases. If we consider that only five per cent. of all the fatal cases come to necropsy it is readily seen that the number of actual cancer cases must be still greater. A more intensive study and an earlier diagnosis of cancer cases is therefore necessary.

This, the second, volume is mainly surgical in nature. The diagnosis and surgical treatment are emphasized. F. Krampf and F. Sauerbruch discuss the malignant affections of the bronchi, lungs, pleura, mediastinum (thymus), heart and pericardium, thoracic wall, and the diaphragm. Ed. Rehn is assigned the malignancies of the esophagus. E. Sonntag takes up the malignant tumors of the abdominal walls. O. Kleinschmidt discusses the pathological anatomy, diagnosis, symptomatology, and differential diagnosis of carcinoma of the stomach. E. Payr contributes a most complete treatise on the various types of treatment for gastric cancer (sarcoma) and their indications. V. Schmieden dilates upon the various malignant tumors found in the intestine and the operative measures necessary. P. Clairmont does the same for the rectal conditions. E. Heller discusses the malignant neoplasms of the liver, gallbladder, pancreas and the spleen and the röntgenotherapy of these conditions. H. Kümmell, Sr., gives an excellent presentation of the subject of the malignancies of the kidneys, the renal pelvis, the ureter and the adrenals, while F. Voelcker and H. Boeminghaus discuss those of the

bladder, the urethra, the testicle and epididymis, the prostate, the seminal vesicle and the penis. N. Guleke is assigned the malignancies of the vertebral column. P. Frangenheim discusses the malignancies of the extremities and also the relationship of tumor formation to trauma.

Each chapter is followed by an extensive bibliography, mostly German. The beautiful colored illustrations and plates are the last word in color photography and the authors and publishers deserve commendation for this comprehensive and beautiful work. The contributors are all authorities in their chosen fields.

NORMAL DIET

The Normal Diet. A Simple Statement of the Fundamental Principles of Diet for the Mutual Use of Physicians and Patients. By W. D. Sansum, M.S., M.D. Illustrated. St. Louis: The C. V. Mosby Company, 1925. Pp. 72.

Within the three score and ten pages of this book is crammed all the knowledge of practical import one need have concerning the normal diet.

Sansum's presentation is simple, direct and adequate. The book should be in the library of every physician, of every hospital, and of every student.

INFANT FEEDING

Feeding and the Nutritional Disorders of Infancy and Childhood. By Julius H. Hess, M.D. Illustrated with forty-two Engravings in the Text and one Full Page Colored Plate. Fourth Revised and Enlarged Edition. Philadelphia: F. A. Davis Company, 1925.

This book is now in its fourth edition. There is a new chapter on celiac disease and the chapters on rickets, scurvy, spasmophilia, acidosis and the anemias of infancy have been brought up to date. There have also been revisions in the section on artificial feeding and in the chapter on vomiting, colic and flatulence, constipation and abnormal stools. The volume is illustrated by numerous engravings and one plate in colors.

MANUAL OF LABORATORY MEDICINE

Clinical Laboratory Medicine. By Henry M. Feinblatt, M.D., and Arnold H. Eggerth, A.B., A.M. Illustrated by Two Colored Plates and Eighty-Seven Engravings. New York: William Wood and Company, 1925. Pp. 424.

This book is somewhat of a departure from the usual laboratory manual, with their necessarily more or less stereotyped collection of diagnostic methods, in that it contains also a description of some therapeutic procedures, such as the technic of blood transfusions, the use of convalescent serum in measles, etc. The book is unusually complete, and the laboratory worker, as well as the clinician interested in the laboratory side of medicine, will find it one of the most useful and practical of volumes. It would seem to be almost "fool proof," for instructions are even given as to the kind of bag to be used in taking blood cultures, with a list of the articles which are necessary for a physician to have with him for this procedure. The contents are about as up to date as it is possible to have them, as is evident by the inclusion of the Dick test for susceptibility to scarlet fever, and the discussion of preventive immunization of this disease by scarlet fever toxin.

There is one feature of the mechanical makeup of the book which is annoying to the reader. In the preface the authors state: "It was thought that the references would be of greater value to the reader if they were placed in the body of the text rather than as footnotes." This has been done with the result that the finished product looks like galley proof. On the first half of page 103, to take but a single example, there is an alternate line of text and line of reference, which makes the reading of the subject matter difficult. It is to be hoped that in the second edition of this very useful book the more conventional method of placing the footnotes at the bottom of the page will be returned to.

ROCKEFELLER INSTITUTE STUDIES

Studies from the Rockefeller Institute for Medical Research. Volume LIII. New York: The Rockefeller Institute for Medical Research, 1925. Pp. 617.

This collection of reprints bears testimony to the great variety of research work being done by members of the staff of the Rockefeller Institute. The range of subjects investigated goes from a study of mosaic disease in tobacco and tomato plants to the bacteriology of the intestinal tract of young calves with special reference to the early diarrhea ("scours"). Of especial interest is the paper of Clement C. Chesterman on the use of tryparsamide in sleeping sickness, which indicates the conquest of another disease by the methods of scientific research, which a volume of this kind so aptly illustrates.

PHYSICIANS' VISITING LIST

The Medical Record Visiting List, or Physicians' Diary for 1926. Revised. New York: William Wood & Company, 1925.

This handy little doctor's helper is unusually attractive this year in appearance and make up. The contents consist of a calendar in good print, giving the changes of the moon, and includes the last six months of the year past and the first six of that to come. Rules for estimating the probable duration of pregnancy are outlined. These are followed by a table of approximate equivalents, including temperature, and medical weight and capacity measures, and linear measures. Next an obstetrical calendar is given in the form of an insert. Following is a list of maximum adult doses by the mouth (apothecaries and metric measures), those included in the *United States Pharmacopœia* being starred. Next is a table showing the wide difference in the size of drops of different liquids, and of the same liquid under different conditions. This table was the work of Albert H. Kinsey and was first published in the *American Journal of Pharmacy.* It shows the importance of prescribing *minims* rather than *drops,* in all cases. Then follows a table of drugs such as are used by general practitioners for emergency conditions. Surgical anesthetics and drugs used chiefly in intramuscular and intravenous injections, which require surgical technic, are excluded. Then comes a table of diagnostic hints on contagious diseases, compiled by Dr. William Rittenhouse; then a page of brief statements of useful medical facts for the general practitioner; and a section on emergencies, including an alphabetical list of poisons and their antidotes. Sections on artificial respiration, signs of death, the writing of wills, and a suggested list of signs for doctors precede the blank pages for special memoranda.

The little book has a folding flexible cover, the pages are giltedged, and it is equipped with pencil and holder.

Medicoliterary Notes.

A notable gathering of physicians and their friends took place at the Waldorf Astoria in New York City on the evening of November 23d, when a dinner was given to make public the plans for the building of the Physicians' Home, *Tranquility*. Among the speakers were Dr. Robert T. Morris, president of the home, Dr. George David Stewart, United States Senator Royal S. Copeland, Representative John J. Kindred, Rabbi Israel Goldstein, Don Seitz, and Drs. Wendell Phillips, Frank J. Monaghan, Walter Bowers, Samuel A. Brown, and George J. Ryan, President of the Board of Education. Dr. Morris announced that 168 acres have been acquired through the benefaction of Dr. Stephen V. Mountain at Caneadea, New York, and that more land is to be sought in the vicinity of Poughkeepsie.

* * *

The recent death of Dr. Edward Willard Watson, of Philadelphia, deprived the profession of one of its well known literary members. Dr. Watson was the author of a number of books, including several volumes of verse, among them *Today and Yesterday, Song of the Flying Hours,* and *If Love Were King.*

* * *

Dr. Beatrice Hinkle has an interesting article in the last number of the *Atlantic Monthly* in which she discusses ably from an analytical point of view some of the problems of modern marriage, in an endeavor to explain why so many marriages of today are socalled failures.

* * *

A member of the Faculty of the University of Lille is reported recently to have found a note written by his father in 1855, in which he said: "I express the view that Pasteur (who was a student there at that time) will make a great name in the world of science. . . . I have had fifty years of experience with students, and never have met with so modest and so studious a pupil as Pasteur."

* * *

Efforts being made in France and the Irish Free State to encourage large families would probably have had the approval of the poet, Swinburne, according to the *Manchester Guardian.* Although he remained a bachelor himself, the poet was very proud of the fertility of his family. He took it as a matter for personal pride that one of his ancestresses bore thirty children.

* * *

The foreign press has recently contained reports of an interesting case in surgery—that of a Japanese monk of fifty-two who fought in the Russo-Japanese war twenty-one years ago and was wounded at Port Arthur. Physicians probed for the bullet at the time, but could not find it. A few weeks ago the monk had a sharp pain in his chest, and the bullet was found and removed.

* * *

A new medical school is to be established in the South at Durham, N. C., the site of the new Duke University, recently endowed by Washington Duke. It is the purpose of the Duke University trustees to associate the medical school with a city hospital, to be constructed perhaps around the existing Watts Hospital, the founder of which was formerly a partner of Washington Duke. It has been announced that probably the resources of the new school will not be limited to the present endowment funds provided by the Duke bequests, but may be increased by donations from the Rockefeller Foundation in pursuance of its usual policy of reinforcing institutions already in existence and soundly based.

* * *

The ancient Taureg tomb, recently discovered in the French Sahara, has disclosed besides valuable relics of a very high type of civilization, a prehistoric statuette of white limestone which has been estimated as having belonged to the Stone Age more than fifty thousand years ago. It is a crudely carved figure of a woman, resembling a Venus found in southern France dating from paleolithic times and another from Germany supposed to be of the Neanderthal age.

* * *

The Bibliothèque Nationale at Paris, the largest library in the world, six hundred years old and for two hundred years in its present building, has for the first time in its history installed a lighting system. Because of fire hazards, the authorities have never allowed any kind of lights in the building, but at last, because of the increase of fire prevention devices, a complete system of electric lighting is being put in.

* * *

The *Survey Graphic* for November is devoted to the subject of municipal health. Among the articles it contains are: The Robust City, by Dr. Haven Emerson; Health Work Pays, by Louis I. Dublin, Ph.D.; The Fever Chart of Progress, by Sir Arthur Newsholme; Guardians of Health, by Lewis W. Hine; In and Out of the Health Workshops, by Mary Ross; Public, Private, and Both, by Homer Folks; The T P R of Public Health; What Should a City Do? by Ira V. Hiscock and Philip S. Platt; What You Can Do, by Dr. George T. Palmer; Where Does Your City Stand? a questionnaire prepared by Dr. Palmer; The Nurse, by Katherine Tucker, R. N; The Schoolroom, by C. E. Turner; Fighting Health Officers I Have Met, by Dr. W. A. Evans; Cancer of Ignorance, by Chester H. Rowell, and the City Health Administration, a reading list compiled by Dr. C. E. A. Winslow. In addition to the special articles, this issue of the *Survey Graphic* contains a number of excellent editorials on the subject of city health.

* * *

The *Current History Magazine* for November contains an interesting article by Vilhjalmur Stefansson on conditions in the Arctic regions. He refutes the old theory that the Arctic is a waste land of ice and snow where there can be no life. Although the summer is only six weeks long, daylight lasts for practically twenty-four hours, long enough to enable many plants to attain a rich and sturdy growth. Another erroneous theory, according to Stefansson, is that the effect of the long months of darkness is depressing. This would be the case, he contends, only for the morbid, although he confesses that he himself was much depressed during his first winter there.

* * *

Another article of interest to physicians is that by Joseph Wood Krutch in the *American Mercury* for November, entitled The Strange Case of Poe. Mr. Krutch sums up his conception of Poe's psychological attitude as follows: "The part which he played in life represented his attempt to act out the rôle which he imagined for himself when he created the various dark heroes of his tales, and his ferocious criticism built up his legend of himself as a man cut off from the majority of mankind by great learning, strange passions, and a dark destiny, not inferior but superior to those with whom he made no part. . . . As the realization that he was, as a matter of fact, the victim of irrational and uncontrollable emotions gradually forced itself upon him, he countered it with the pretense that he was, on the contrary, abnormally clear in his mental processes. . . . Finally, he attempted, in *The Philosophy of Composition,* to convince himself that all his previous work had been but the fruit of this same rational faculty, to which he now clung desperately as a proof of his sanity. Thus the process was complete."

* * *

Recent magazine articles on medical subjects include: Aesculapians of Early California, by Dr. George D. Lyman (*Overland Monthly* for October); What Price Babies? by Alida S. Walker (*Pictorial Review* for October); Before Six, by Mary Ross (*Survey* for October 1st); Scarlet Fever, by Dr. Matthias Nicoll, Jr. (*Delineator* for November); White Magic and Black, by John W. Vandercook (*Harper's Magazine* for October); The Best Cure for Nervousness, by Dr. Harvey W. Wiley (*Good Housekeeping* for October); How to Handle Temper Tantrums, by Dr. George K. Pratt (*Designer* for November); Poison Gas for Home Use, by William G. Shepherd (*Collier's* for October 17); Does the Baby See? by Dr. Charles Gilmore Kelley, (*McCall's Magazine* for October); Steps Toward the Conquest of Leprosy, by Dr. James A. Tobey (*Current History* for October); Quackery and Its Psychology, by Dr. James Edgar Swift (*Scribner's Magazine* for October); That Inferiority Feeling in Children, by Dr. George K. Pratt (*Modern Priscilla* for October).

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In our December 2d issue, we noted among recent publications of interest to the medical profession, *The Challenge of Childhood,* by Dr. Ira S. Wile, but through error the publisher was stated as Alfred A. Knopf, instead of Thomas Seltzer.

Abstracts from Current Literature

ENDOCRINOLOGY

Iodine Hyperthyroidism.—Arnold S. Jackson (*American Journal of the Medical Sciences,* August, 1925) asserts that the number of cases of iodine hyperthyroidism has greatly increased as the result of the popular demand for iodine in the treatment of goitre. He reports thirty-eight cases, twenty of which were observed within the last six months; two terminated fatally. This condition has been termed iodine-Basedow in literature and so became confused with exophthalmic goitre.

Iodine should not be distributed promiscuously either in water or salt, but should be administered in exact amounts and under a physician's order. Even minute amounts of iodine are sufficient to initiate symptoms of hyperthyroidism in certain persons with adenomatous goitres. Iodine should be administered with particular care to children with adenomatous goitres; it should never be given to adults with this condition. Every child in the goitre belt between the ages of ten and twenty years should receive small weekly doses of iodine for the prevention or treatment of colloid goitre. Iodine hyperthyroidism is rare in persons under thirty years of age. It develops only in the presence of an adenomatous goitre. The clinical syndrome may be clearly distinguished from that seen in toxic adenoma or exophthalmic goitre. Thrills, bruits and exophthalmos do not occur. If an early diagnosis is made medical treatment may abort the toxic symptoms. Thyroidectomy is indicated when the condition does not yield to medical measures.

The pathological picture is not characteristic. Grossly, the gland has the typical appearance of an adenomatous goitre containing degenerated, cystic, fibrous and calcareous encapsulated nodules. Colloid may be seen in large amounts. The microscopical picture shows acini of variable size, lined with flat, cuboid cells, and filled with colloid. Fetal acini and occasional small areas of hypertrophic cells are found.

Exophthalmic Goitre.—In discussing several cases of exophthalmic goitre in regard to the spontaneous course of the disease and the effect of various types of treatment, Cyrus C. Sturgis (*Medical Clinics of North America,* March, 1925) summarizes the most important facts as follows:

1. A patient may recover from the disease without any treatment other than avoiding heavy work. This recovery may be permanent; in the patient whose history has reported it has persisted for five years.
2. Although temporary recovery may occur in untreated patients, there is a marked tendency for the disease to recur. Each recurrence is likely to result in additional cardiac injury which may lead to the patient's death.
3. Röntgen ray treatment produces results in a small group of these patients which equal surgery. In many, however, it apparently has no effect.
4. Following partial thyroidectomy, all of the symptoms may reappear, after eight years of perfect health.
5. The administration of iodine to these patients is a valuable preoperative measure, as it is followed by a transient drop in the basal metabolism.

The ideal treatment of exophthalmic goitre, that is, the removal of the primary cause, has not been discovered, as we are still in the dark concerning the real changes which are responsible for the excessive or altered function of the thyroid gland. Subtotal thyroidectomy seems to offer the best chances of cure, although even in the most expert hands a second resection of the gland and occasionally a third is necessary. The tendency for an unknown percentage of patients with this disease to recover without treatment does not argue that treatment should be withheld, for, while a remission may intervene, it is characteristic for a series of waves of the disease to appear which may be responsible for the patient's death in a thyroid crisis, or the production of chronic cardiac disease leading to a life of invalidism. The röntgen ray, while it has a low percentage of apparent cures, is useful if the patient cannot be persuaded to undergo surgery, although it should be discarded after a short trial if the improvement is not striking, as experience shows that additional treatment under these circumstances will be of little value. Iodine, in the form of Lugol's solution, is of great assistance, as in doses of five drops three times daily it usually causes a prompt drop in the basal metabolism, which persists for only a relatively brief interval. It is during this remission that surgery can be performed with the greatest margin of safety.

The Inevitable Damage Consequent upon Goitre.—Frederick A. Coller (*Boston Medical and Surgical Journal,* September 17, 1925) says that endemic goitre can be prevented in a large number of cases by supplying the necessary amount of iodine to overcome the deficiency of this substance. It is also undoubtedly true that iodine in proper doses will reduce and perhaps cure many endemic goitres in the early stages when they consist largely of colloid. After the adenoma is well established and grossly in evidence, and after the degenerations have begun to take place, medication is rarely successful in causing its disappearance. After the patient has reached the age of twenty-five iodine therapy has little permanent effect in eradicating the adenomatous elements in the goitre and injudicious use of iodine may precipitate a hyperthyroid reaction. The longer the adenomas are present the greater the chance there is of the appearance of disabling pathological and clinical conditions, so that one can foretell with certainty that an individual with an adenomatous goitre at twenty-five will in all probability at forty-five have demonstrable lesions of the heart, thyroid and mind. The onset of these complications is usually insidious and the fullblown lesion is ordinarily the first thing that brings the patient for treatment.

There can be no field for radiotherapy in the early treatment of the adenoma without symptoms, whatever may be said about its effect on the stage of hyperthyroidism. Any prophylactic treatment would have to extend over a long series of years and no evidence has been advanced that the adenoma can be destroyed by any selective action of the rays. The surgical removal of the adenomatous goitre at a stage before the onset of symptoms is safe and accurate. If one waits for the development of the sequelæ a mortality begins to appear. Before twenty-five operation is usually not indicated except for gross pressure symptoms and it seems wise to give the goitre a chance to stabilize up to this period, assisting it by medication. The rare appearance of complications and the likelihood of recurrence in adolescence makes surgery inadvisable and no harm can be apprehended by waiting. Removal of endemic goitre after twenty-five has a high prophylactic value and should be urged on the patient as soon as a definite diagnosis is established.

Attempted Classification of Thyroid States.—The view expressed in this paper (*Revue Française d'Endocrinologie,* January, 1925) is the conclusion of M. Lucien, J. Parisot, and G. Richard, as given in their forthcoming treatise on thyroid endocrinology. In refusing the commonly accepted belief in hyperfunction or hypofunction as the characteristic of all thyroid pathology, the authors emphasize the objections raised by Gley, that a small remainder of the gland is sufficient to carry on thyroid function, that a minute graft prevents the disturbances caused by extirpation, and that hypersecretion effects the suppression of the destructive mechanism which normally regulates the entrance of the active principle into the circulation. They note further that nitrogen exchange and carbohydrate metabolism are both disordered as well in myxedema and in Basedow's disease, and the same of coagulation and of the edema caused by the trophic action of the thyroid glands on the skin. On these and still other considerations they base the conclusion that Basedow's disease and myxedema are alike forms of dysthyroidism, in the sense that not the amount, but the quality of the secretion is affected.

The difference between socalled hypersecretion and hyposecretion the authors explain by the form of the pathological lesions in a given case. In myxedema there is a mild inflammation of the parenchyma, chiefly in the connective tissue and tending to atrophy. In Basedow's disease the predominating lesion is one of the gland tissue without atrophy. The difference is perhaps one of degree of infection rather than kind; in myxedema suppression or reduction of morphogenetic hormozones, in Basedow's disease excitation of the neurovegetative system rules the clinical picture. It is possible in some instances to observe the coexistence of the two forms in one gland and even the progressive passage

from one to the other. The existence thus of pure and of mixed pathology leads the authors to adopt a classification of thyroid disturbances in three grades: 1, complete myxedema or athyroidism; 2, incomplete insufficiency, and 3, the Basedow syndromes, the last two being forms of dysthyroidism.

Adrenal Syndromes.—N. Pende remarks (*Revue Française d'Endocrinologie,* January, 1925) on the close connection generally recognized between the adrenal glands and the sympathetic nervous system, saying that physiology and clinical experience absolutely confirm the view that makes of those glands a paranervous glandular organ. Their cortex and medulla, he adduces many facts to show, function, not conjointly, but independently. Among cortical functions he includes adipogenesis and stimulation in both sexes of the mammary gland. His enumeration of the symptoms of insufficiency and again of those of normal and of morbid hyperfunction is long and very comprehensive. In speaking of the treatment of medullary hyperadrenalism, he proposes section of the left splanchnic nerve as a means of reducing secretion of adrenalin on the part of both adrenal glands. This operation, he believes, through limiting the amount of adrenalin produced and through the direct production of abdominal vasodilatation, should bring about a hemodynamic condition effective against circulatory hypertension.

Adrenal Syndromes.—N. Pende presented this paper (*Revue Française d'Endocrinologie,* March-April, 1925) at Milan to the Italian Congress of Internal Medicine, October, 1924. The division of adrenal syndromes into cortical and medullary is only measurably possible on account of the close anatomical and functional relation between cortex and medulla. Provisionally the following symptomatic classification will serve:

1. Symptoms of hypoadrenalism, predominatingly cortical in type: cachexia with inhibition of adipogenesis and hypocholesterinemia; pronounced muscular adynamia, psychic adynamia; hypoplastic condition with arrested development of the genital organs in young subjects.

2. Symptoms of hypoadrenalism, predominatingly medullary in type; melanoderma, hypoglycemia, diminished nitrogen metabolism, asthenia and cardiovascular atony, signs of general sympathetic hypotonia.

3. Symptoms of hyperadrenalism predominatingly cortical in type: abundant nutrition and adiposity with muscular and psychic hypersthenia; possible mammary hypertrophy; hypercholesterinemia; precocious dysharmonic hypergenitalism before puberty, with tendency to development of male characteristics in women.

4. Symptoms of hyperadrenalism, predominatingly medullary in type: hypertensive condition; signs of general sympathetic hypertonia; neurogenous hyperglycemia and glycosuria, angiospastic crises, psychic irritability.

Adrenal Syndromes.—C. Piazza (*Revue Française d'Endocrinologie,* March-April, 1925) enumerates the appearance of physiological adrenalinemia; adrenal effects on sympathetic nervous tone; influence of adrenalin on exchange in general and on carbohydrate metabolism in particular; functional relation of the pancreas and adrenal glands; rôle of the adrenals in cholesterinemia; antitoxic effects. The multiplicity of functions attributed to these organs, differing and specific in relation to cortex or medulla, shows them to be glands indispensable to life. By means of adrenalin the medulla modifies the negative effect on arterial pressure and muscular tone exercised by the various endogenous hypotensors. It moderates muscular contractility and controls capillary tonus. The cortex regulates lipoid metabolism, fixing the toxic lipoids and transforming them into inoffensive products.

The Objective Determination of Gonad Failure in the Male.—A. W. Rowe (*Boston Medical and Surgical Journal,* March 12, 1925) says that the clinical picture produced by ablation or depression of the endocrine function of the male gonad is not constant. The variations are probably due largely to the age at which the failure occurs. Eunuchoid states are frequently due to secondary gonad failure, which is a result of some other endocrine dysfunction, notably pituitary. The treatment of such conditions by use of testicular extracts or implants cannot be expected to give good results. Therefore, every patient showing eunuchoid symptoms should be carefully examined for evidences of other endocrine disease before testicular organotherapy is advised. If such treatment is indicated it is best obtained by implantation of human testicular substance.

The treatment of such conditions as senescence, "sex lassitude," dementia precox, epilepsy, or general asthenia, by gonadal extracts, has no logical basis and is not at present justifiable. There is no definite evidence that the use of testicular extract in tablet form has any specific effect in man.

Endocrine therapy of gonad failure in the human male cannot become an established form of treatment until the effect of such failure upon bodily processes has been determined by objective methods, and the value of therapy proven by demonstrating its effects in the same way. At present the conditions for which organotherapy is indicated are limited to the results of castration and certain eunuchoid conditions.

Transitory Congestive Thyroid Enlargement.—Samuel Z. Orgel (*American Journal of Diseases of Children,* January, 1925) concludes that the prognosis in transitory congestive thyroid enlargement does not seem to be unfavorable to life. It is important, however, to regulate the life of the child so that as little strain as possible is placed on the affected tissues. This can be done by cautioning the child not to shout, sing, count aloud, laugh boisterously, lift heavy weights or strain at stool, and especially to refrain from any act that necessitates hyperextension of the head. The mother should be cautioned against allowing the child to learn to play any wind instruments, if the child is musically inclined. Every means should be adopted to lessen the likelihood of the cervical tissues becoming congested. If it has originated as a congenital deficiency, cure is improbable; if however, it has arisen as a result of violent exertion, it may possibly be cured or disappear spontaneously providing the causal strain can be eliminated. If the cause is not removed and the continuous congestion of the vessels continues there is great possibility of the enlargement becoming permanent.

The proper treatment is still problematic. It may consist of some mechanical appliance for preventing the distention and progressive development of the tumor.

Basal Metabolic Rate.—Henry F. Moore (*Lancet,* January 31, 1925) states that the basal metabolic rate should be interpreted in relation to the history, clinical condition, and physical examination of the patient, and that it cannot and should not be evaluated by itself alone. It may be notably increased in fevers, hyperthyroidism (exophthalmic goitre, thyrotoxic adenomata, and some cases of malignant tumor of the thyroid and thyroiditis, overdose of thyroid substance or thyroxin, many cases of severe anemia, many cases of chronic leucemia, after ingestion of food, from muscular work and in some cases of hyperpituitarism. The administration of insulin and suprarenal extract usually causes some increase in the metabolic rate. It may be notably decreased below the normal limits in hypothyroidism, in the clinical conditions myxedema and cretinism, in traumatic shock, and in chronic insanition.

It is in diseases of the thyroid gland that the determination of the basal metabolic rate is of the most value in clinical medicine. From an anlysis of over six thousand thyroid cases by Boothby and Sandiford a basal metabolic rate of over ten per cent above the average normal values of DuBois and Aub was found in ninety-eight per cent of cases of exophthalmic goitre, and only seven per cent were within the limits of fifteen per cent; fifty-six per cent. of cases of thyroid adenomata showed evidences of hyperthyroidism with a basal metabolic rate of more than ten per cent above normal; the vast majority of colloid goitre cases showed a normal rate and a few showed an increase up to twenty per cent above normal. According to other authors, cases which show the "sympathomimetic" symptoms of the exophthalmic goitre syndrome (tachycardia, tremor, exophthalmos, asthenia, diarrhea, sweating) without the increase of the basal metabolic rate and without goitre are to be considered not cases of hyperthyroidism but of "autonomic imbalance." These are called borderline cases by Means.

From a study of their own cases and of the literature, the author concludes that the test gives useful information for estimating the degree of thyroid deficiency, of thyrotoxicosis and the results of treatment, that it gives considerable information in the differential diagnosis of mild and doubtful cases suspected of hyperthyroidism or hypothyroidism, but that it is not of great value in frank cases of hyperthyroidism, myxedema, or cretinism.

Iodine in Exophthalmic Goitre.—Francis R. Fraser (*British Medical Journal,* January 3, 1925) studied the effect of iodine administration in twenty-four cases of exophthalmic goitre. It is reported that iodine can bring about a lowering of the basal metabolic rate and of the heart rate, and an increase of body weight, with a striking improvement in the general condition of the patient. The improvement obtained, however, with the iodine does not as a rule persist.

The optimum dose at the commencement of the treatment appears to be about fifteen minims of a ten per cent. solution in alcohol but this dose cannot as a rule be maintained more than a few days or weeks. If the administration is stopped the condition immediately relapses. For prolonged treatment the dose should be diminished as soon as the initial improvement has taken place, and the administration continued with doses of three to six minims daily. The doses must be carefully regulated according to the condition of the patient. Increasing hardness of the thyroid gland is an indication for smaller doses. The condition of the patient may be made worse, instead of better, if too large a dose is employed.

Iodine in the Treatment of Goitre.—William A. Plummer (*Medical Clinics of North America,* January, 1925) reports that in the Mayo Clinic they now give ten minims of Lugol's solution as a routine three times a day for at least seven days previous to a thyroidectomy. The solution is administered for a longer period to patients who have been in a particularly bad condition, and at the end of this period are rapidly improving. To patients in a crisis or near crisis, fifty minims are given during the first two or three hours, by mouth if it can be retained, otherwise by rectum. If the patient is in a crisis, this is followed by fifty minims during the following forenoon. To the patients having socalled postoperative recurrences that can be controlled are given ten minims of the solution daily over an indefinite period. This period is generally determined by stopping the iodin at the end of ten days. If there is any recurrence of hyperthyroidism, the administration of iodin is again resumed.

The results may be briefly stated as follows: The symptoms characteristic of the disease, as distinguished from the symptoms that might result from the administration of thyroxin, disappear in from one to ten days. This includes the "stare" but not the exophthalmos, which in a sense remains a deformity. The crisis is always controlled within twenty-four hours. As a rule, the patient can take food within a few hours. Since the introduction of the use of iodine the mortality has been rapidly reduced. The operative mortality has been reduced two per cent. or more by the administration of iodine. Preliminary ligations have, to a large extent, been eliminated from the treatment. The surgical mortality, by case, this year is 0.6 per cent.

Iodine Toxicity in Goitre.—E. Ledoux (*Revue de médecine,* November 4, 1924) states that although it is well recognized the paucity of iodine in the food and atmosphere is an important etiological factor in many goitres, the relationship of the amount of iodine in the thyroid gland to the functional state of the latter is still a mooted question. In some cases of dysthyroidism, and even of exophthalmic goitre, determination of the iodine in the thyroid yield figures sufficiently variable to preclude the conclusion that hyperthyroidism is definitely attended with an excess of iodine in this organ. In myxedema with marked loss of colloid substance and hyperplasia of the nonglandular tissue, iodine treatment has no effect, while in goitre with with some remaining colloid and affinity for iodine, the drug causes both general improvement and reduction of the goitre. Rilliet in 1860 recognized in some individuals, upon administration of iodine, a "constitutional iodism" featured by loss of weight, palpitations, dyspnea, sweating, insomnia and extreme nervousness—a condition strikingly similar to Graves's disease. Gauthier asserts that these special forms of iodism may develop alike in persons with latent goitre and those with manifest goitre. Thus, the inhabitants of Geneva, Switzerland, who are more or less predisposed to goitre, are asserted to develop the symptoms of "constitutional iodism" when they visit the iodine laden environment of the seacoasts. In a few cases iodine absorbed by goitre cases has led to an acute thyroiditis with swelling, redness, heat, pain and moderate fever. Much more often, it gives rise to "iodine Basedow," which is the same as Rilliet's "constitutional iodism," and may be so marked as to include tachycardia, premature contractions, tremor, exophthalmos, diarrhea, flushes, copious sweats, and sometimes glycosuria with acetonuria. The pharmacological form and mode of introduction of the iodine exert little influence on these complications. In fact, even the dose itself seems of relatively slight importance, the author having observed cases of iodine Basedow after a few rubbings of iodide ointment over the goitre, while Roth has reported it after ingestion of a few tablets of iodostarin, containing only minute amounts of iodine. As such manifestations are by no means exceptional, caution is in order in the treatment of goitre with iodine and iodides.

Iodine as an Aid to Surgery in the Treatment of Exophthalmic Goitre.—Arnold S. Jackson (*Lancet,* April 11, 1925) found the use of iodine, as advocated by Plummer in the treatment of exophthalmic goitre, to be the most important factor in reducing the operative mortality in his series of cases. The development of a highly perfected operation, with the consequent reduction in time, the fact that patients come to operation at an early stage in the disease, and improved methods of anesthesia, are other factors tending to reduce the operative mortality. Iodine will not permanently cure, but merely temporarily alleviate the symptoms of exophthalmic goitre. The use of iodine will prevent or terminate, however, a fatal crisis as well as postoperative hyperthyroidism. The necessity for ligation is eliminated in ninety per cent. of cases by the use of iodine. Patients are given thirty drops of Lugol's solution daily for three days and forty or fifty drops for one or two days. Following the operation, Lugol's solution is administered by mouth and by proctoclysis. The average stay in the hospital is reduced to five days, as the patients are able to take the preoperative treatment at home. Within forty-eight hours after the ingestion of iodine, there is a marked abatement of all the symptoms of hyperthyroidism. The nervous, vascular, and digestive svstems are all favorably influenced. There is an average reduction of plus nineteen per cent. in the basal metabolic rate.

Goitre Heart.—Nellis B. Foster (*American Journal of the Medical Sciences,* May, 1925) says that cardiac symptoms associated with thyroid disease are of common, even usual occurrence, but these symptoms may be of pronounced severity without detectable evidence of heart disease. The socalled cardiac deaths which follow operation are seldom due to heart failure but more often to vascular failure; that is to say, there is, in these cases, a vasomotor paralysis and a widening of the peripheral vascular field notable by a sharp drop in the diastolic blood pressure, a condition similar to shock.

The commonest type of disorder referable to the heart in thyrotoxicosis is auricular fibrillation. Whether this arrhythmia is due to lesions in the myocardium or to nervous influences is not yet known. Lesions in the myocardium have been described in cases of thyroid disease and they have been experimentally induced in animals, but these lesions are not found in every case. Heart block and auricular flutter are of exceptional occurrence and probably denote serious myocardial degeneration. It is important to control auricular fibrillation, especially if operation be contemplated, since the mortality in cases with fibrillation is higher than in controlled cases. A reversion to normal rhythm may be usually secured by proper treatment, which includes rest, digitalis and quinidine.

Circulatory Disturbance in Diseases of the Glands of Internal Secretion.—Observations by Field and Bock at the Massachusetts Hospital lead J. H. Means to conclude (*Endocrinology,* May-June, 1925) "that if, in the normal person because of the performance of muscular work, or in the patient with Graves's disease because of excess of thyroxin, the tissues call for an increased supply of oxygen, the circulation responds to the demand adequately, that is with an increment apparently somewhere nearly proportional to the increment in demand. The work induced circulation increase of the normal person, however, is brought about by an increase both in pulse rate and amplitude of beat (output per systole), whereas, in that resulting from hyperthyroidism, the increased heart output seems largely to result from increased pulse rate alone, the output per systole showing a less striking tendency to rise." "Metabolic rate increases are accompanied by blood flow increases of varying degrees. In muscular work blood flow just parallels or falls somewhat short of metabolic increase. In hyperthyroidism blood flow parallels or somewhat exceeds metabolism, and after adrenalin injection it very markedly exceeds metabolism. In muscular work and after adrenalin there is an

increase in both rate and amplitude of heart beat, while in hyperthyroidism the increase in rate is the more striking of the two." Probably in the case of adrenalin there is an action directly upon the heart itself, increasing its force of beat, and peripherally there is vasodilatation. The point emphasized is that the signs of hyperthyroidism are understandable on the basis of the known morbid physiology, that is, rapid metabolism and blood flow and a certain amount of arteriolar dilatation, together with the direct cardiac resultants of long continued overwork and hurry and finally fatigue and failure.

The Heart in Exophthalmic Goitre.—A. Oswald (*Schweizerische medizinische Wochenschrift,* January 15, 1925) asserts that the cardiac disturbances in exophthalmic goitre are mainly due to an increased irritability of the nerve supply (extracardial) of the heart, as well as of the intracardiac centres of stimulation (from which the heterotopic stimuli producing the arrhythmias originate). This condition of increased excitability forms part of the general affection of the nervous system. It has been proved experimentally and clinically that the hormone of the thyroid gland increases the lability of the entire nervous system. The thyroid secretion, however, is not a stimulant for the nervous system, *per se,* but only increases its predilection to stimulation. It acts as a sensitizer, and, consequently, even physiological stimuli may produce pathological effects.

The chief factor in the treatment is rest. Hydrotherapeutic measures, such as warm baths and carbonic acid baths, are secondary factors. Cold applications should not be made without due consideration. Dietetic measures are important. Therapeutically, cardiac tonics should be given very cautiously, and digitalis, particularly, is not recommended, as not only is it usually valueless, but it also seems to favor the development of auricular flutter. Ouabain, however, which has an effect similar to that of digitalis upon cardiac activity but is not such a powerful stimulant, is recommended. Eserine, which reduces the irritability of the cardiac fibres, combined possibly with strophanthus, may be used. Quinine may be used successfully in attacks of tachycardia, as it has a negative dromotropic effect. Nervines (baldrian, adonis, crataegus) are especially indicated. In recent times, preparations of ergotoxin have been recommended for their property of paralyzing the sympathetic nerves.

Pathology of Exophthalmic Goitre.—Richard B. Cattell (*Boston Medical and Surgical Journal,* May 21, 1925) thus summarizes his paper:

1. In eighty-seven and nine tenths per cent. of patients with exophthalmic goitre, in our series, receiving iodine therapy, there is an involutional change in the thyroid gland; six and seven tenths per cent showed an increasing hyperplasia.
2. There is an increase in the iodine content of all glands after iodine administration.
3. The iodine content is directly proportional to the involutional change, up to a certain point.
4. Similar changes follow superior pole ligations and hemithyroidectomy together with rest, but it is most marked after iodine alone.
5. The clinical improvement seen after iodine bears a relation to this structural and especially chemical change.
6. There is a group of patients who show marked involutional change and a high iodine content in their glands, yet still suffer from severe exophthalmic goitre.
7. The pathology of exophthalmic goitre is not constant; parenchymatous hyperplasia is seen superimposed on adenomata and endemic goitres.
8. Lymphoid infiltration occurs as the rule; it remains after involution to some degree.

Compensatory Hypertrophy of the Thymus Gland in the Rat.—J. Marmorston-Gottesman and Henry L. Jaffe (*Journal of Experimental Medicine,* September, 1925) by removing one lobe of the thymus of the young rat, studied the enlargement of the remaining lobe. The results indicate that hypertrophy takes place, and emphasize the functional importance of the thymus gland before puberty, since the compensatory enlargement does not occur after puberty. With the onset of involution, there is a marked or almost total decline in the function of the gland, in spite of the fact that anatomically the thymus may persist to old age. With the appearance of a stimulus for regeneration, e.g. suprarenalectomy, the involuted gland takes on functional activity.

Capillary Arches, the Endocrine System, and Feeblemindedness.—The capillary loops of the nail furrows were observed by J. W. Jänsch (*Bericht über den Zweiten Kongress für Heilpädagogik in München*) to be normally very fine and hairlike after the period of infancy, forming a dentated network beneath the edge of the corium. In early infancy these fine capillaries do not exist, but only the horizontal layer of bloodvessels from which they will spring later. The new growth occurs about the sixth month of life. But in a large number of cretins examined the capillaries of the nail furrows were knotted and twisted in irregular formations in those above six months of age. The author regards this as a reliable diagnostic feature of true cretinism, appearing some months after birth in conjunction with other changes in the colloid chemistry of the skin, such as persistence of infantile lanugo, and with ununited epiphyses, persistent bone nuclei, especially in the carpus, stunted growth, psychic deficiencies, and the infantile condition of the bones of the skull and teeth. Under a course of thyroid treatment the capillary condition improved and finally sometimes approached very near the normal regular arrangement. In classes of normal children in the schools of Marburg and Cassel the capillaries of the nail furrows contrasted in the same way with those of children in the school for defectives, and thyroid administration to the latter produced corresponding gradual improvement in this as in mental and other respects. The observations were made with the capillary microscope devised by O. Müller.

Study of Thymus Glands.—Guy L. Bliss (*Archives of Pediatrics,* April, 1925) presents the following summary of his work:

1. Many investigators report that an apparently socalled enlarged thymus, which can be demonstrated by percussion and on the röntgenogram, is very common.
2. The function of the thymus has not been proved. Presumptive evidence classes it with the endocrines.
3. The topography of the thymus lends evidence to the view that part of the symptomatology may be of pressure origin.
4. In the majority of cases a dangerously enlarged thymus presents a definite symptomatology.
5. All apparently socalled enlarged thymus glands do not have symptoms.
6. Socalled enlarged thymus glands without symptoms are not considered dangerous.
7. The norm for thymus gland for a baby of a given size, age and weight has not been established.
8. The cause of thymic death has not been proved.
9. The term "symptom producing thymus" is preferable to "enlarged thymus."
10. Röntgenotherapy is efficient and unattended with danger, but it must be borne in mind that only enough röntgenotherapy should be used to relieve dangerous symptoms, and that in the hands of an expert.

An Extract Obtained from the External Bovine Parathyroid Glands Capable of Inducing Hypercalcemia in Normal and Thyreoparathyroprivic Dogs.—A. M. Hjort, S. C. Robison, and F. H. Tendick (*Journal of Biological Chemistry,* August, 1925) present evidence indicating that the bovine parathyroid glands contain an acid extractable hormone capable of inducing hypercalcemia in dogs. The active substance is probably obtainable from the lipoid free constitutents of the glands, and is rendered soluble in both alcoholic and aqueous acid media although alcohol is in nowise essential. Boiling the finely ground glands is as good if not a better means of extracting the hormone than digestion at room temperature. The hormone is active in increasing the serum calcium of thyroparathyroprivia as well as of normal dogs. The active substance must be quite stable when it is not affected by boiling.

The Internal Secretion of the Ovary and the Tonicity of the Vegetative System.—From the observations of A. Crainicianu it appears (*Presse Médicale,* January 28, 1925) that complete removal of the ovaries lowers the tonus of both the vegetative systems. The absolute tonus of the sympathetic is habitually diminished on extirpation of the ovaries. The absolute tonus of the vagus also declines, but presents oscillations. Sometimes the fall is so considerable that it finally reaches zero. The internal secretion of the ovary in conjunction with that of the other glands maintains the tonus of the vegetative system: consequently, when the secretion is withdrawn, the vegetative tonus is lowered.

PEDIATRICS

An Enlarged Thymus in an Infant; Tetany After X Ray Treatment.—The history given by M. J. Konikow (*Endocrinology,* January-February, 1925) is of an infant in whom dyspnea from birth was caused by thymic enlargement. Tetany occurred at five weeks of age after two x ray treatments to the thymus, and calcium and parathyroid substances were ineffectual in counteracting it. The author believes the x ray treatment responsible for the tetany by impairing the parathyroids as well as the thymus gland.

Treatment of Rectal Prolapse in Children.—Julio Schwarzenburg (*Archivos Americanos de Medicina,* July, 1925) reports four cases of rectal prolapse successfully treated by the method of Schotter and Lembach, namely, the perirectal injection of one to two centimetres of milk in three or four places, making a total amount injected of four to eight centimeters. If the first treatment is unsuccessful the injections may be repeated one or more times at intervals of six or seven days.

X Ray Therapy of Chronic Cough in Children.—Lewis J. Friedman (*Archives of Pediatrics,* March, 1925) reports gratifying results in two cases of chronic cough of varied etiology in children. The more favorable results were observed in treatment of cough following pertussis. The roentgenographic findings in the chest subsequent to treatment revealed little if any change, but the annoying subjective symptoms disappeared. The thymic residue, however, recedes in all cases. The maximum number of treatments required to produce an amelioration of symptoms was two series of treatments. Complete cessation of the cough was seen at the end of six fractional exposures.

Pathology of Fatal Measles.—James Denton (*American Journal of the Medical Sciences,* April, 1925) says that the primary lesions of measles are located in the lower trachea, bronchi, and the contiguous lung. There are three types of lesions in the buccal mucous membrane: Reaction in focal necroses in buccal epithelium; suppurative lesions in and about submucous glands and their ducts; inflammatory lesions of submucous lymph follicles. Koplik's spot is an inflammatory lesion of a submucous gland, the bluish halo about it is due to the collarlike plexus of venules about the duct. The gram negative bacillus found in the lesions appears to have etiological relationship to measles and deserves further investigation.

The Heart in Faucial Diphtheria.—H. M. Marvin (*American Journal of Diseases of Children,* April, 1925) states that a review of the literature concerning the circulatory system in diphtheria appears to indicate: 1, that degeneration of the vagus nerves is of questionable importance; 2, that there is no specific affinity of the diphtheria toxin for the conduction system of the human heart; 3, that toxic myocarditis is present in a large proportion, possibly in all, of the patients who die of circulatory failure; 4, that there may be, in addition to myocarditis, or independent of it, a primary failure of the peripheral circulation which is ascribed to various factors.

Clinical and electrocardiographic observations on ninety patients with faucial diphtheria were studied, and the only abnormalities in the electrocardiograms which seemed to be of significance were the disturbances in auriculoventricular or intraventricular conduction. Sinus arrhythmia occurred invariably in young patients with heart rates below 95 per minute. Auricular and ventricular premature beats, sinoauricular block, and variations in the form of the P wave were noted seldom and appeared to have no significance. No evidence was obtained to indicate that in some patients the heart was primarily injured and in others the peripheral circulation suffered the first and greatest damage. In the patients with circulatory impairment, the picture seemed to be that of myocardial failure.

The signs of myocardial involvement which appeared to be of greatest value were vomiting, hepatic engorgement and a change in the character of the first heart sound. Syncope occurred but once in the series here reported, and gallop rhythm was noted only three times. There was a complaint of abdominal pain in five of the thirteen fatal cases. Necropsy in five cases showed widespread myocarditis. In one case the entire conduction system was profoundly damaged, in one the sinoauricular node alone was affected and in the others the conduction system appeared normal. The vagus nerves were found to be normal in one case.

Acidification of Milk with Vinegar (Acetic Acid) in Infant Feeding.— Berman S. Dunham (*American Journal of Diseases of Children,* February, 1925) states that acetic acid is added to cow's milk to counteract the effect of the buffer substances of the milk on the gastric acidity. The use of this acid in the form of ordinary household vinegar lessened the cost of acidulation, utilized a common and harmless article of the kitchen for this purpose, and made the grocery store the source of supply.

A pint of vinegar milk is made from one ounce (thirty c.c.) of vinegar (from five to six per cent. acetic acid) to fifteen ounces (450 c.c.) of cow's milk. The vinegar milk is given undiluted, except to infants younger than two months who receive four ounces (120 c.c.) of water or gruel in the total daily feeding. Corn syrup diluted with an equal volume of water is added in the amount of one ounce of the diluted syrup to the pint of vinegar milk. The daily amount of the diluted syrup seldom exceeds an ounce and a half, and this is reduced after cereal feedings are begun. The foregoing mixture is well tolerated as a routine food. Disturbances of digestion are a rare occurrence, and can be corrected by a temporary reduction of the sugar and fat elements of the food.

The clinical results of vinegar milk feeding compare favorably with those of other types of acidified milk. The factors of economy, common usage, wide commercial distribution and safety recommend vinegar for the acidifying agent when acidified milk is indicated.

Insulin in Athrepsia.—Nobecourt and M.-M. Levy (*Bulletins et mémoirs de la Société médicale des hôpitaux de Paris,* July 23, 1925) note that in athreptic infants below three or four months of age the caloric requirements per kilogram of body weight are twice those of normal infants of the same age. Furthermore, athreptics always have digestive disturbances which interfere with the exhibition of a sufficient diet. Observation showed that these infants tolerate large amounts of cane sugar, and that the latter may even save life in otherwise seemingly hopeless cases. It differs from proteins and fats in requiring little or no increase of energy expenditure for its utilization. A further useful step is the addition of an agent affording immediate, intensive utilization of the sugar, namely insulin. In an illustrative case described, no improvement had occurred in twenty days under the usual measures, and death seemed inevitable. Upon giving insulin, the lethal trend was arrested and the child began to gain weight. In this infant, aged three months, maternal lactation had failed and the child did not thrive on milk mixtures. Rapid improvement occurred under 700 grams of milk diluted one third with buttermilk, with addition of fifteen per cent. of sugar, together with two subcutaneous injections daily of four clinical units of insulin and ten mils of thirty per cent. glucose solution. As much as fifty grams a day was gained under this régime.

Allergic Manifestations in Infancy and Childhood.—George Piness and Hyman Miller (*Archives of Pediatrics,* September, 1925) report that disturbances of infancy and childhood that have long been known under the term exudative diathesis are manifestations of allergy or protein sensitizations. Individuals in the group manifesting these disturbances are sensitive to ingestion, inhalation, contact, or parenteral injection of certain foreign proteins. The clinical manifestations resulting from the introduction of such proteins is dependent in character, not on their site of entry into the body but on the particular tissue or tissues which may be sensitized. Thus, in one individual, it may be the lining mucous membrane of the respiratory tract resulting in hay fever and asthma, and in another it may be the skin, resulting in urticaria or eczema, even though the offending protein in both instances is ingested and reaches these sensitized tissues not directly but by way of the blood stream. Often overlooked in infancy and childhood are the allergic disturbances of the nose and throat. Seasonal hay fever, although not common, is, however, not characteristic in this period of life and lack of realization of the possibility of a perennial or chronic type of hay fever, from the ingestion of food proteins, leads to the belief that it is often mistaken for some other condition. Removal of tonsils, adenoids and turbinates does not relieve the symptoms. In fact, such removal often means but a regrowth of tissue consequent upon the lymphoid hypertrophy characteristic of protein sensitization. Of interest is the statement that a large percentage of adult sufferers from asthma and hay fever give a history of eczema or socalled frequent colds in childhood.

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Medicolegal Notes.

WAIVER OF RIGHT TO CLAIM PHYSICIAN'S TESTIMONY AS PRIVILEGED

The Missouri Supreme Court holds, Weissman v. Wells, 267 S. W. 400, that where a plaintiff in a personal injury case has called physicians to testify to her hysterical malady after the injury, and testified that she had never been afflicted with hysteria before the injury, she waived her right to claim as privileged the testimony of another physician who had treated her for hysteria before the injury.

ANALYTICAL CHEMIST AS EXPERT WITNESS

In an action by an employee for infection in the thumb, requiring amputation, and alleged to have been caused by absorption into the abraised thumb of bronze powder, it was held, Dickey v. Western Tablet Co. (Mo. App.), 267 S. W., 431, that an analytical chemist of long experience, who had studied therapeutic chemistry in a general way, but had never practised medicine, was competent to testify as an expert witness as to the poisonous effect of copper.

MEANING OF "SOUND HEALTH" AND "GOOD HEALTH" IN INSURANCE POLICIES

The Tennessee Supereme Court holds, Metropolitan Life Ins. Co. v. Chappell, 269 S. W. 21, that, as used in insurance policies and applications for insurance, there is no material difference between the term "sound health" and "good health." The court says that the phrase "sound health," when so used, is not to be taken literally. It does not mean perfect health, or imply absolute freedom from bodily infirmity or tendency to disease, but means generally the absence of any vice or disease in the constitution of a serious nature, or that had a direct tendency to shorten life, as contradistinguished from a temporary ailment or indisposition. That one is in "good health," within the meaning of an insurance policy provision, means that he or she has no grave, important or serious disease, and is free from any ailment that seriously affects the general soundness or healthfulness of his or her system.

Where an autopsy showed that an insured person died of Bright's disease thirty days after the issuance of a policy providing that the insurer assumed no liability unless the insured was in sound health at the date of the policy, such evidence showed that the insured was not in sound health at the date of the policy, irrespective of the insured's knowledge or lack of knowledge that she was not in sound health. The court said: "It is the fact of sound health of the insured which determines the liability of the defendant in this character of policies, not apparent health, or his or any one's opinion or belief that he was in sound health."

VALIDITY OF LEASE OF CHARITABLE HOSPITAL

A charitable organization without capital stock, incorporated for the purpose of building and carrying on a hospital for the care of the sick and of training people to nurse the sick, executed a lease of the hospital to one who, though not occupying the technical position of agent, trustee, or director, was one of the members of the organization who had the management of the institution, and the effect of the lease was to vest in him the exclusive control with right to the entire revenue. In these circumstances, the North Carolina Supreme Court held, Fowle Memorial Hospital Co. v. Nicholson, 189 N. Car., 44, 126 S. E., 94, that it was incumbent on him, in a suit to set aside the lease and enjoin his exclusive control of the hospital, to show that the lease was fairly and openly authorized and executed for an adequate consideration, and that its execution was free from undue or controlling influence, oppression, or imposition.

EXPERT EVIDENCE AS TO CAUSE OF BURNS BY ELECTRICITY

In an action for injury to a boy by coming in contact with an uninsulated electric wire, the doctor who attended the boy gave his opinion that his condition came from burns, and that he was burnt by a live wire. He testified that he had very little opportunity for observation of burns by electricity, but had seen a few cases. The North Carolina Supreme Court held, Graham v. Sandhill Power Co., 189 N. Car. 381, that a question as to whether he had an opinion satisfactory to himself as to whether he caught hold of a live wire with one or both hands, and his answer: "I have an opinion. I don't think he grabbed the wire; I think that his hand just barely touched the wire, his right hand," were properly admitted.

PRIVILEGED COMMUNICATIONS—RAILROADS HOSPITAL ASSOCIATION'S PHYSICIAN

The plaintiff in a personal injury case was a member of a railroad hospital association. His dues, together with those of the other employees of the railroad, kept up the hospital, and the physicians and surgeons employed therein were paid by these dues, and were therefor the physicians and surgeons of the employees of the railroad company. The plaintiff agreed with the railroad's claim agent to be examined as to the extent of his injuries so that he could settle with the claim agent. After examination by one of the hospital surgeons, the surgeon was called as a witness to testify for the railroad company as to the nature and extent of the injuries. The Arkansas Supreme Court held, Johnson v. Missouri Pacific, 269 S. W. 67, that the surgeon's testimony as to information obtained on the examination was incompetent as privileged. The plaintiff had it in his mind to be treated by the surgeon as well as examined for settlement, and if he changed his mind as to settling, that would not constitute a waiver of the privilege.

TESTING KNOWLEDGE OF EXPERT WITNESS

The Texas Court of Civil Appeals holds, San Antonio Public Service Co. v. Alexander, 270 S. W. 199, that to test the medical knowledge of an expert witness on disease, it is proper to ask him about his knowledge of proven standards and recognized authorities on the subject under investigation, and in a personal injury case it was proper to read from a text book on nervous diseases and ask the witness whether he agreed or disagreed with the statements therein.

MEDICAL TESTIMONY NECESSARY TO SHOW CONNECTION BETWEEN INJURY AND DISEASE

In an action for personal injuries, where it appeared that seven weeks after the accident plaintiff became sick with lobar pneumonia and was taken to a hospital for treatment, only one doctor testified for plaintiff as to the connection between the injury and the pneumonia, and he refused to say that the injury caused the pneumonia, though testifying that it made plaintiff more susceptible to the disease. The Pennsylvania Supreme Court held McCrosson vs. Philadelphia Rapid Transit Co., 129 Atl. 568, that this testimony did not justify proof regarding the pneumonia, nor the submission of its effect or expense as distinct items of damage, since it wholly failed to show with reasonable certainty that the disease was caused by the injury. "Of course," the court said, "human frailty presents absolute certainty in this class of cases; but, if one having special knowledge on the subject cannot, in conscience, say that in his 'professional opinion the result in question did come from the cause alleged,' there is in fact nothing in the evidence from which a jury, having no such knowledge, could possibly find that it did."

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Miscellany.

London Life in the Eighteenth Century.—We are very apt nowadays to deplore the customs and manners of times gone by and to point to the present time and the present generation as inferior to those say of one hundred years or so ago. As a matter of fact, although there are fluctuations in progress, we have advanced greatly in most respects and, perhaps, especially so in sanitation, hygiene and in preventive medicine generally. A book has been written recently by M. Dorothy George published by Kegan Paul, London, in which she tells of the conditions prevailing in Great Britain among the masses under the first two Georges. The health conditions were appalling, deaths exceeding births, the level of London's population being maintained only by rural migration. Three out of four children died before the age of five, and the infants received in workhouses practically all perished. The desertion of children was common and the Foundling Hospital was established through revolt from "the inhuman custom of exposing newly born infants to perish in the streets." From Stuart days it had been the policy to check the alarming growth of London by repression of new building and congestion naturally followed. Personal hygiene had obvious impediments before the advent of cheap cotton clothing which could be easily washed. But contemporaries seem to have been right in their view that one of the most crushing handicaps on public health was "the orgy of spirit drinking, which was at its worst between 1720 and 1751." Distilling was encouraged in the interests of agriculture, and gin was sold everywhere. The lower populace was hopelessly immersed in drunkenness and the first efforts at regulation of the traffic met with resistance that made them a dead letter. The century was half over before better considered legislation got the upper hand of the evil.

Physical Unfitness.—Physical unfitness is a term merely of relative significance, according to Dr. Chester T. Brown, associate medical director of the Prudential Insurance Company of America. A man may not be fit to fight or to undergo the strain of prolonged or strenuous muscular exertion, and yet outlive the warrior or the athlete. If he is normal, he is fit, and it has been the experience of Dr. Brown and other medical authorities concerned with the problems of life underwriting that fitness, physically speaking, is the rule among men under forty.

During the world war, or rather when the United States entered it and put the draft law into effect, there were enough rejections on physical grounds to create the impression that this was a nation of flatfooted men born with a remarkable assortment of bodily defects. But this, Dr. Brown says, was the result of an attempt to apply to vast numbers of recruits for the fighting forces the extra high standards devised for a peace time army which prided itself on the physical excellence of its personnel.

As a matter of fact Americans meet the medical tests devised to support insurance standards based on normal life expectations extremely well. Rejections of applicants for policies have been steadily decreasing in number for approximately fifteen years. They now represent, in the experience of the Prudential at least, only 6.02 per cent. of the total number of applicants compared with almost twice that ten years ago. But the significant feature of this showing, pointed out by Dr. Brown, is that most of those rejected had passed out of youth and attained the age at which physical imperfections and impairments begin to manifest themselves.

There has been an improvement of more than two and a half per cent. since prohibition went into effect, but Dr. Brown was not inclined to attribute much of the credit for it to the Volstead act. "It is more likely the result," he said, "of our greater appreciation of healthy bodies, though it remains true probably that many of us eat too much and are inclined toward excesses in other ways—straining hearts, for example, by too much exertion in competitive sports. If this were not so, there would be fewer rejections of insurance seekers at the age of forty and beyond. It is also attributable in some part to health propaganda by organized bodies devoted to the object of increasing the span of life.

Health Department Lectures on Social Hygiene.—The New York State Department of Health has arranged a series of special lectures to be given throughout the State as a part of its educational work in venereal disease control. These lectures, five in number, are to be delivered by men and women of wide experience and special knowledge in sex education and venereal diseases. The titles and the aims of the lectures are as follows:

Social hygiene education presents to parents, educators, welfare workers and civic organizations the possible methods for directing the sex instinct into constructive channels.

Coaching your boy on life's problems is intended to advise fathers on the problem of sympathetic parental guidance of normal adolescent boys.

The gift of sex, a similar lecture for mothers and daughters, deals with the value of sex in the development of the individual, the community and the human race.

Building for manhood aims to give adolescent boys accurate scientific information regarding the sex impulse and to inspire them with ideals of clean, moral living by appealing to their instincts of loyalty, chivalry, and the love for a square deal.

Building for womanhood is the corresponding lecture for girls. It emphasizes the need of sympathetic guidance and training to enable girls to understand and to adapt themselves to the crucial physical, mental and emotional changes.

The keen interest of various New York communities in sex education and venereal disease prevention is shown by the fact that since 1919 there were given, exclusive of New York city, almost four thousand lectures with an attendance of about half a million persons, and that there were distributed more than three million pamphlets.

A recent announcement states that the urgent need of the lectures may be gleaned from these facts: many cases of syphilis and gonorrhea are contracted innocently; many adolescent youths are infected before they have acquired an effective sense of social responsibility; hundreds of babies are born annually with either active or latent syphilis; venereal diseases may be arrested by modern medical treatment so that the diseased person will be rendered noninfectious; and many cases could have been prevented through education, character training and the inculcation of health habits during and previous to adolescence.

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Chile Has a Social Hygiene Law.—The United States Public Health Service states that the Republic of Chile has recently enacted legislation for the control of venereal diseases. The law establishes a Division of Social Hygiene with three departments, namely, education, control, and healing. The various functions of this division are definitely outlined.

The department of education is held responsible for special propaganda, for the study of educational programs, for the creation of social hygiene professorships in the medical schools, institutes, and normal schools, and for suggestions in elementary social hygiene instruction to be included in general public education. This department is also to direct the control and repression of prostitution, watch over the specialists in venereal diseases, exacting from them the certificate of competence the law requires, and to watch over the practices of public and private laboratories in investigations connected with the bacteriological and serological diagnosis of social diseases. One section of the department of control, the office of control of prostitution, has for its function the control and repression of openly established and secretly practiced prostitution. It also watches over the morals of public resorts. The office of professional control, another section in the same department, has control over the exercise of the practice of surgery as relating to social diseases. It exacts special licenses from physicians and laboratories.

The department of healing, through its central pharmacy office, distributes medicines and curative materials to hospitals and clinics. It maintains a manufacturing laboratory for preparations needed by the pharmacies of the service. The same department maintains an office of clinical statistics and an office of medical information. The latter makes available information on medical progress in experimental investigation, diagnosis and treatment of venereal diseases, tuberculosis, alcoholism, physical education, and hygiene of dwellings; also, on progress of the fight against venereal diseases in different towns which distinguish themselves in this field. The formation of libraries and the supplying of magazines indispensable to the service are to be administered by the office of libraries and magazines.

The social hygiene brigades, one for each of the five zones into which the Republic of Chile is divided, have clinics and hospitals for venereal diseases, degenerates, and tuberculous persons. Provision is also made for brigade reformatories to render hospital service for those who have contagious diseases and have refused treatment in compliance with the law. The President of the Republic is authorized to incorporate programs of study in social hygiene into the textbooks of all schools. There is a penalty for private schools failing to provide such instruction.

Women practising prostitution are submitted to medical inspection to verify their pathological condition. Any woman prostitute declared to have a venereal disease is confined to a hospital during the period of contagion. Those resisting treatment are sent to a reformatory. Treatment of venereal diseases is obligatory and provided at public expense, except in chronic cases. These are to be cared for by private physicians or charitable institutions authorized to do such work. A strict system of reporting of venereally diseased by private physicians is inaugurated. Provision is also made for injunction and abatement measures, making it possible to close up as a nuisance any building which the owner allows to be used for purposes of prostitution. Professional or commercial proclamations relating to operations or advertisements of drugs and specifics for curing venereal diseases are not to be accepted for publication in newspapers and magazines, unless endorsed by the Division of Social Hygiene. A medical certificate of good health is required from both men and women before marriage.

Public Health Courses to Be Given at University Summer Schools.—According to *Public Health Reports* (May 29, 1925), an increasing number of universities and colleges of the United States, apparently, are offering courses in various public health subjects at their summer sessions. In some instances an extensive program of courses is presented, including virtually every subject which a health officer or physician might desire.

Columbia University has issued a separate announcement of courses in public health and preventive medicine and medical courses, some of three and some of six weeks' duration—over ninety courses in all. These are offered under the following heads: Public health and preventive medicine, nursing education, physical education, nutrition, courses for social workers, and medical courses.

The University of Michigan also presents a separate announcement of courses in hygiene, public health, and related subjects—a total of approximately ninety courses, covering a wide field of subjects of interest to sanitarians and physicians. In addition to the work at the university in Ann Arbor, three courses are to be given at the laboratory of the Michigan Department of Public Health in Lansing.

The Harvard Medical School announces graduate courses in virtually all branches of medicine and the medical sciences.

The University of Colorado offers approximately twenty courses at Boulder, of general interest to sanitarians, and nine courses at the School of Medicine in Denver, of special interest to both physicians and sanitarians.

Both the University of Iowa and the University of California, which conducted public health summer schools in 1924, again offer attractive courses.

Rutgers University, in cooperation with the New Jersey State Department of Health, presents a unique program of courses for health officers and public health nurses. Lectures will be given on Friday and Saturday of each week. Courses for public health nurses will be offered as a part of a more extensive program. Courses for health officers and sanitary inspectors will be completed during the present summer session.

Among the lecturers giving courses at these various institutions this year are Richard A. Bolt, Hugh Cabot, Michael M. Davis, Haven Emerson, John N. Force, Allan W. Freeman, H. W. Hill, L. L. Lumsden, E. V. McCollum, Richard M. Olin, Earle B. Phelps, M. J. Rosenau, Thomas W. Salmon, Henry C. Sherman, John Sundwall, Philip Van Ingen, Henry M. Vaughan, Frankwood Williams, and Francis Carter Wood.

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The Smallpox Menace in London.—The medical correspondent of the *London Times* stated in its issue for April 28, 1925, that this present year had witnessed a remarkable increase in the weekly notifications of smallpox. So much so indeed that it can fairly be said that the disease has now become endemic in certain districts of the midlands. He presents a chart in which it can be seen how steady has been the rise in the number of notifications since the beginning of 1922. There is, he points out, no guarantee that the increase has reached its highest point; indeed the neglect of vaccination in many areas makes it highly probable that only the beginning has so far been witnessed. The virulence of the disease, too, is stated to be augmenting. Thus we are rapidly approaching the circumstances in which a really serious and deadly outbreak of smallpox may be expected. That this could ever have occurred must have seemed to our grandparents rejoicing in their newfound deliverance from this plague, utterly incredible. It may be, as has been stated recently, that nothing short of a severe visitation of the disease will open the eyes of the nation to the value of the protection afforded by vaccination.

The Prevalence of Cancer.—The most valuable statistical indications of the prevalence of cancer anywhere are the official death rates which are published by cities, states, governments, and insurance companies, says the American Society for the Control of Cancer.

Morbidity reports are not made, for cancer is not a reportable disease. Such knowledge as is wanted of the number of cases which exist anywhere at any time must be had by special inquiry or from estimates based upon the number of deaths which are reported. The deaths give a poor indication of the cases, for there is no fixed relation between the deaths and cases in the various forms of cancer, or of cancer in the different parts of the body. The duration of a case before death varies between a few months and many years. There is nothing approaching uniformity about it. In consequence of these facts, it is not known, even approximately, how many cases of cancer there are in the United States or in any part of it. It would be desirable to have this information, but no reliable estimates can be made.

Experience with Lactic Acid Milk in Infant Feeding.—Morris Gleich (*Archives of Pediatrics,* August, 1924) claims that lactic acid milk in infant feeding is no panacea. It has a valuable place in the armamentarium of the pediatrist. While lactic acid milk can be used routinely with good results, he believes that ninety-five per cent. of babies will gain on any good method of feeding; the other five per cent. require good nursing as well as careful feeding. Considering athreptics as difficult feeders, lactic acid milk is, as experience shows, an excellent means of helping them. It gives them concentrated feedings and by virtue of its acidity enables them to take and digest it more readily than sweet milk. It was also found valuable for the breastfed baby who needs complementary feedings. Lactic acid milk may probably replace protein milk in the severe diarrheas of infancy. By increasing gastric acidity, it may play an important rôle in the prevention and treatment of rickets and tetany.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE CONSTANT NYMPH. By Margaret Kennedy. Garden City: Doubleday, Page and Company, 1925. Pp. 344.

DUCDAME. By John Cowper Powys. Garden City: Doubleday, Page and Company, 1925. Pp. 458.

SEGELFOSS TOWN. Translated from the Norwegian of Knut Hamsun, by J. S. Scott. New York: Alfred A. Knopf, 1925. Pp. 368.

ANNUAL REPORT OF LIBRARY COMMITTEE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. For the Year 1924. Pp. 23.

FROM INFANCY TO CHILDHOOD. The Child from Two to Six Years. By Richard M. Smith, M.D. Boston: The Atlantic Monthly Press, 1925. Pp. 105.

EINFUEHRUNG IN DIE PHARMAKOTHERAPIE. Für Mediziner und Natuwissenschaftler. Von Reinhard von den Velden und Paul Wolff. Leipzig: Georg Thieme, 1925. Pp. 200.

COLDS. Cause, Treatment and Prevention. By Russell L. Cecil, M.D. New York and London: D. Appleton and Company, 1925. Pp. 111.

AIDS TO OBSTETRICS. By Samuel Nall. Revised by C. J. Nepean Longridge. Ninth Edition. New York: William Wood and Company, 1925. Pp. 228.

LES DEBUTS DE LA TUBERCULOSE PULMONAIRE. Par le Dr. L. Ribadeau-Dumas. Avec 16 planches hors texte. Paris: Ernest Flammarion, 1925. Pp. 281.

THE LIFE OF SIR WILLIAM OSLER. By Harvey Cushing, M.D. Two volumes, illustrated. Oxford: the Clarendon Press; New York: Oxford University Press, 1925. Pp. 28.

ARZTE UND PATIENTEN WACHT AUF! Erinnerungen und Warnungen eines Alten Arztes aus 35 jähriger Praxis. Von San Rat Dr. Leo Silberstein. Berlin: Ritter, 1925. Pp. 49.

TUMORS AND CANCERS. A Biological Study. By Hastings Gilford, F.R.C.S. With an Introduction by Sir Frederick Keeble, C.B.E., F.R.S. London: Selwyn & Blount, Ltd., 1925. Pp. 703.

DER ELEKTRISCHE UNFALL. Skizziert für Ingenieur und Arzt. Von Prof. Dr. Med. Stefan Jellinek. Mit 25 Textabbildungen. Leipzig und Wien: Franz Deuticke, 1925. Pp. 142.

OCULAR DEFECTS ARISING FROM SKULL INJURIES. Bureau of Workmen's Compensation, Medical Division Bulletin, No. 10. By John S. Somberg, M.D. State of New York, Department of Labor, 1924. Pp. 49.

THE EMOTIONS, MORALITY AND THE BRAIN. By C. v. Monakow of Zurich. Authorized translation by Gertrude Barnes, A.M., and Smith Ely Jelliffe, M.D., Ph.D. Nervous and Mental Disease Monograph Series No. 39. Washington and New York: Nervous and Mental Disease Publishing Company, 1925. Pp. 95.

A COMPANION TO MANUALS OF PRACTICAL ANATOMY. By E. B. Jamieson, M.D. Second Edition: New York: William Wood and Company; Edinburg and London: Henry Frowde and Hodder & Stoughton, 1925. Pp. 558.

DIAGNOSTIK UND THERAPIE DER MAGENKRANKHEITEN. Von Professor Dr. I. Boas. Mit 145 Textabbildungen und 6 Farbigen Tafeln. Leipzig: Georg Thieme, 1925. Pp. 817.

PRACTICE OF GYNECOLOGY. By Henry Jellett, M.D., F.R.C.P.I. Fifth Edition, with 417 Illustrations (many in color) and 15 colored plates. Philadelphia: Lea & Febiger, 1925. Pp. 744.

CASE OF OSSEOUS METASTASIS FROM PRIMARY CARCINOMA OF THE RIGHT MAMMA. By Sir George Thomas Beatson, M.D. (Edin.), K.C.B. Issued by Research Department of the Glasgow Royal Cancer Hospital. Briston: John Wright & Sons, Ltd., 1925. Pp. 486.

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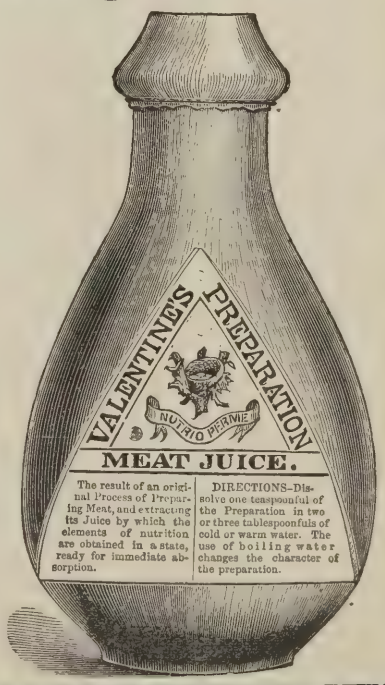
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Miscellany.

Huxley.—Thomas Henry Huxley was born at Ealing on May 4, 1825, and when he died at Eastbourne on June 29, 1895, he had been for twenty or thirty years about the best known scientific man in England. With his many fundamental discoveries in zoology and with his many distinctions in other fields, the fact that he was a qualified medical man had little to do. The profession may, however, pride itself on the memory that almost the only regular teaching he ever received was as a medical student at Charing Cross Hospital—a memory revived annually in the Huxley Memorial Lecture—and that it was an appointment as a ship's surgeon in the navy which gave him his practical start in life and the chance of exploring the wonders of the ocean, which he did to such good effect that he was elected a Fellow of the Royal Society at the age of 25 and received a Royal Medal in the following year; in 1881 he became president.

Huxley was in the first place a distinguished comparative anatomist with a bent for philosophical generalization, and at the same time a horror of letting his imagination run in front of the facts of structure which were before him. For twenty-five years he worked in that doubting period of biological thought when, among Lyell and Scrope's uniformitarianism, Cuvier's archetypes, Oken's idealism, and the accurate examination of structure by Johannes Muller and his companions, the world was groping its way to the realisation of the broad truth which Darwin drove home in the "Origin of Species." And in the cumulative development of knowledge which led up to the revolution of 1859 Huxley played a prominent part with such contributions as his recognition and delimitation of the Hydrozoa as a natural group and his work on the theory of the vertebrate skull. Once Darwin had provided a mechanical conception of how evolution worked, Huxley was persuaded where the philosophy of Lamarck and Herbert Spencer had failed to convince him. He became one of the most active protagonists of the new doctrine, and his own work, now largely paleontological, centred round it. In the second place Huxley was for thirty-one years an inspiring professor of natural history at the Royal School of Mines, and when he got facilities at South Kensington in the early seventies he introduced the method of practical class-teaching with types of animals and plants which has been everywhere imitated with such success. As a memorial it would have been appropriate if the "Huxley and Martin" of those early days had not been replaced so largely by the almost equivalent "Marshall and Hurst." And, in the third place, Huxley was a good citizen who felt it laid upon him to rebuke error and propagate truth, and the last third of his life was mostly occupied with his public duties. It is in some ways a little unfortunate that the general public knows him best by his controversial activities. He had a hatred of dogma and privilege and pretense which seems now rather over-fierce, and it is hard for us to be enthusiastic over his polemics with Mr. Gladstone and the Duke of Argyll about the literal truth of Genesis. He hit harder than is customary nowadays, and when he said that you could always remember which side of the heart the mitral valve was on by reminding yourself that bishops were never in the right, he had perhaps forgotten that his first paper to the Royal Society was communicated by the Bishop of Norwich. But our very difficulty in fully sympathizing with his position simply means that he and his fellow workers in the cause of freedom of thought succeeded, and it is in large part their work which has led to the broadminded toleration which makes such controversies impossible in this country—though not in America—at the present day. There was a time when Huxley's name could hardly be mentioned in genteel society; he was a declared agnostic and perhaps he declared it rather loudly. But in calmer days it is not difficult to see peeping out of his writings a rather wistful longing that the intellectual discipline which he had imposed on himself would let him believe a few things which he could not prove. "To do justly and to love mercy and to walk humbly with thy God" was his epitome of an ideal religion. (*Lancet,* May 9, 1925).

Sunlight and Mental Development.—Sir Henry Gauvain is of opinion that the intellectual output is definitely increased as a consequence of exposure to sunlight carried out in a rational and instructed way. The intelligence of a group of children treated by insolation at Alton is higher than that of a similar group under treatment in London, and the difference is apart from heredity or physical condition. We seem to have heard of this before, says the *Medical Press,* June 10, 1925, and the idea gains force when we read that sunlight raises the spirits of those who come under its influence, and renders them more capable of benefiting by the education provided. On the other hand, it is clear that the lack of sunlight may reduce the capability of benefit; but to claim that brain power is dependent upon sunlight is quite another matter. What proof is there that those who inhabit sunny lands have a greater brain development? Doubtless a fine sunlit day exercises an invigorating effect upon the temperament of those who are unaccustomed to that environment. Under similar conditions long-continued, the invigoration becomes lassitude. That is the evidence of the tropics.

New Cure for Pellagra Announced by Government.—The United States Public Health Service has announced the results of experiments which prove that severe cases of human pellagra can be either prevented or cured by means of dried yeast. Surgeons Joseph Goldberger, G. A. Wheeler, and W. F. Tanner, after the successful treatment of twenty-five out of twenty-six patients, have united in a report which reveals that they were led to this discovery by following another disease in dogs. Black tongue, a bacterial disease with somewhat similar effects on the skin as are produced in severe cases of pellagra, also a bacterial infection, was produced experimentally in dogs. Then the dried yeast was given. The cures were so satisfactory in the cases of the dog disease that the Public Health Service surgeons tried the yeast treatment on pellagra patients. As early as the second or third day beneficial results were noted. It is only in severe cases of pellagra that such dried yeast treatment is necessary as in milder cases careful feeding is sufficient.

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The Common Ground of Law and Medicine.—Lord Justice Atkin was the speaker at the annual meeting—the 151st—of the Middlesex Hospital Medical Society on May 12th, and explored what he called "the dusty purlieus of a lawyer's mind" on the subject of law and medicine. Touching lightly on the history of the two professions, he remarked on the early embodiment of sanitary measures in legal codes, and said that perhaps the most powerful legislators of history had been Moses, Mahomet (both of whom were sanitarians), and the chief medical officer of the Ministry of Health. The professions had proceeded together, but not always at the same pace. While it might be said that the law had exhibited a fairly constant development from later Roman times, medicine had stood still for many centuries after Galen, and, indeed, until about fifty years ago medicine remained more or less an empirical art based upon incomplete experience and upon hypotheses which were to a large extent untrue.

In recent times medicine had made enormous advances and had become a science, which could hardly yet be said of law, for law was subject to variation at the instance of legislatures as well as to the fallible interpretations of judges. Medicine and law were working towards the analogous goals of health and justice, which had much in common. Both professions sought after truth, and both tested carefully the evidence presented to them—lawyers by a process of crossexamination, medical men by ever closer and more accurate observation assisted by elaborate instruments. Crossexamination was rather repugnant to the popular mind because it represented the application of well known and tested principles by which the ordinary man was not guided in his own particular judgments and affairs; instead of relying on what was ascertained by accurate observation, the ordinary man was guided largely by emotional preferences, prejudices, and impressions which had persisted from his youth in spite of evidence that they were erroneously based. Lord Justice Atkin believed crossexamination, properly applied, to be the most effective means of ascertaining the truth whether as to a fact or a theory. In some branches of medicine—psycho-analysis, for example—crossexamination was one of the principal arts, pursued, he did not doubt, at times with great success. That it was an art which required cultivation and practice was illustrated in the courts when some litigant conducted his own case, and failed miserably in his attempts at crossexamining the other side.

The Lord Justice went on to speak of the various ways in which the two professions could assist one another, and the great range of subjects, relating to both civil and criminal law, in which the law depended upon the information given by the medical man. In civil law these subjects included such large matters as marriage, injuries, insurance, and workmen's compensation. The general attitude of the law towards the medical man was to treat him, not as an advocate or as one supporting a particular thesis for its own sake, but as himself a minister of justice anxious to assist the court at arriving at a true conclusion. To doctors who were called upon to give evidence he would say that it was of first importance for them to make sure whether they were speaking of something which they had ascertained as a fact or were simply putting before the court their impression or theory. Many topics of interest to both professions, he continued, were still outstanding. The most important was the great question of insanity and the responsibility of the insane person for criminal acts. Medical men had not yet been able to define what they meant by insanity. The difficulty was as old as Hamlet, and the speaker was not sure that the definition of "true madness"—"nothing else but mad"—had advanced much further. But he hoped that at any rate in respect to criminal responsibility it would be considered a fair and proper thing to find irresponsibility when the crime was committed from irresistible impulse the result of a diseased mind, and he was himself awaiting the time when some legal authority would explain what the true position was in quite well authenticated cases. Another outstanding question was professional secrecy. The extreme claim for privilege probably could not be upheld. There was no protection for a medical man in respect of such matters, and the law would so remain, he had no doubt, until some doctor—might he say, some fanatical doctor?—in the witness box declared that the confidence existing between himself and his patient was as sacred to him as that between priest and penitent or lawyer and client, and that he was prepared to go to prison for the rest of his life rather than violate it. The question would then arise whether the conflicting claims could not be reconciled by something less than a complete obligation on the part of the doctor to make a disclosure when called upon.

The lecturer also mentioned another question, which he said was too controversial to enlarge upon—the question whether medical men might not fairly claim to have decisions affecting professional conduct made subject to some judicial investigation, instead of being left to the decision of any tribunal which did not act upon legal principles and upon evidence which could be tested and controverted by cross-examination. That was a matter he must leave to the doctors. In conclusion, he declared that law, equally with medicine, had important preventive aspects. He was surprised and pained when, at an important medical dinner two years ago, the remark of the Lord Chief Justice that the ideal and practice of lawyers was to be peacemakers was received with derision. Lord Hewart's remark was perfectly true, however much opposed it might be to the "picture-house" view of the lawyer. Each profession had much to learn from the other, and each depended in a large measure on the other's confidence and goodwill. (*British Medical Journal,* May 16, 1925).

Most Child Poisonings Due to Strychnine.—Of seventy deaths due to accidental poisoning during 1924 among children between the ages of one and four years insured in the industrial department of the Metropolitan Life Insurance Co., twenty-four were due to strychnine. This was four times as many as the number due to lye and other alkalies, which came second in numerical importance. Cathartic pills, containing strychnine and left within the reach of children, were one of the most important sources of poisoning it was said.

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Studies and Demonstrations in Malaria Control.—In reviewing the activities of the Rockefeller Foundation during 1924, Dr. George E. Vincent, president of the foundation, made reference to the studies and demonstrations made in malaria control during the period under review. He said: "Malaria is a more difficult disease to control than yellow fever. The malaria parasites continue to live in people's blood unless destroyed by the persistent use of quinine in sufficient quantities over a period of several years. Then, too, the malaria mosquitoes are of several closely related species and, unlike the highly domesticated yellow fever insect, breed in natural collections of water, ponds, reservoirs, and ditches, often at a distance from human habitation. Thus malaria control is by no means technically easy, except in the most favorable circumstances, and may not be economically feasible. In extreme cases malaria may and does make whole regions practically uninhabitable. In many parts of the world, for example, in large areas of the tropics, along the Italian coasts, in Macedonia and Greece, malaria is a dangerous, even deadly, foe. Several British colonies, the Panama Canal Administration, the Italian Government, and the United States Public Health Service, among others, have demonstrated the possibility of effecting varying degrees of control by large and small scale drainage, the oiling or Paris-greening of pools, the use of fish, the administration of quinine, the screening of houses, etc.

"Since 1916 the International Health Board has contributed to demonstrations in malaria control, especially in towns and in counties which include urban and rural districts. During 1924 the Board aided thirteen states, twenty-three counties, and one town in the United States and maintained demonstration units in four Brazilian villages near Rio de Janeiro. In three of these latter places the decline in the number of cases was marked."

Crude Rates of Mortality from Cancer.—It has long been puzzling to observe the differences which are reported by different countries. Notwithstanding the fact that all civilized nations are supposed to employ the same system of classifying the data, the rates are curiously unlike. The question has persistently been asked, "Are there really so many more fatal cases of cancer in some countries than in others, or may the differences which appear be ascribed partly to the methods which are employed in observing and recording the deaths?"

No final answer has been made to this question. The weight of the evidence which is now available is that there are real and substantial differences. Similarly, on comparing cancer mortality statistics for the same areas of country over a period of years, there generally appears to be an increase. That cancer is increasing in the United States is the opinion of the government officers who have charge of compiling the statistics. That it is becoming more prevalent in England and Wales is the opinion of the Registrar-General of those countries.

In the United States the figures published by the Census Bureau indicate that there is more cancer in the eastern and far western states than in the middle and southern states. In Europe southern countries seem to have less than northern ones.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LUCIENNE. By Jules Romains. Translated by Waldo Frank. New York: Boni and Liveright, 1925. Pp. 255.

THE RECTOR OF WYCK. By May Sinclair. New York: The MacMillan Company, 1925. Pp. 258.

INSTINCT. A Study in Social Psychology. By L. I. Barnard. New York: Henry Holt and Company, 1924. Pp. 550.

MEDICAL CLINICS OF NORTH AMERICA. Mayo Clinic Number, January, 1925. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1027-1401.

CLINICAL MEDICINE FOR NURSES. By Paul H. Ringer, A.B., M.D. Illustrated. Second Revised Edition. Philadelphia: F. A. Davis Company, 1924. Pp. 306.

SECOND INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY. Papers by American Contributors. Rome, May-June, 1923. Washington: The Military Surgeon, 1924. Pp. 119.

FEEDING, DIET, AND THE GENERAL CARE OF CHILDREN. A Book for Mothers and Trained Nurses. By Albert J. Bell, A.B., M.D. Illustrated. Philadelphia: F. A. Davis Company, 1924. Pp. 290.

THE HEALTH-CARE OF THE BABY. A Handbook for Mothers and Nurses. By Louis Fischer, M.D. Fifteenth Edition, Completely Revised. New York and London: Funk & Wagnalls Company, 1925. Pp. 248.

AN INTRODUCTION TO DERMATOLOGY. By Sir Norman Walker. Eighth Edition. With 92 Plates and 80 Illustrations in the Text. New York: William Wood and Company, 1925. Pp. 373.

GYNECOLOGY. Medical and Surgical. By P. Brooke Bland, M.D. With 644 Illustrations, mostly original, including 43 colored text figures, and 12 insert plates, 10 of which are in colors. Philadelphia: F. A. Davis Company, 1924. Pp. 1257.

THE MEDICAL SCIENCES IN THE GERMAN UNIVERSITIES. A Study in the History of Civilization. Translated from the German of Theodor Billroth, with an introduction by William H. Welch. New York: The MacMillan Company, 1924. Pp. 292.

ELEMENTARY MORPHOLOGY AND PHYSIOLOGY FOR MEDICAL STUDENTS. A Guide for the First Year and a Stepping-stone to the Second. By J. H. Woodger, B. Sc. London: Humphrey Milford, New York: Oxford University Press, 1924. Pp. 528.

CONTRIBUTION TO THE STUDY OF PERNICIOUS ANEMIA AND PLASTIC ANEMIA. By Arthur Sheard, M.D. A Thesis Presented for the Degree of Doctor of Medicine in the University of Leeds, December, 1923. New York: William Wood and Company, 1924. Pp. 94.

LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By Elbert W. Rockwood, M.D., Ph.D., and Paul Reed Rockwood, M.D. Fifth Edition, Revised and Enlarged. Illustrated with four colored plates and forty-three text engravings. Philadelphia: F. A. Davis Company, 1924. Pp. 413.

PSEUDOAPPENDICITIS. Study of Mechanical Syndromes of the Right Lower Quadrant Simulating Appendicitis. By Thierry de Martel and Edouard Antoine. Authorized Translation from the French: by James A. Evans, A.B., M.D. Preface by R. Bensaude. Illustrated with forty-one engravings. Philadelphia: F. A. Davis Company, 1925. Pp. 211.

CLINICAL THERAPEUTICS. By Alfred Martinet, M.D. Authorized English Translation from the second revised and enlarged edition by Louis T. deM. Sajous, B.S., M.D. With 332 Text Engravings. Complete in two volumes. Volume I, Therapeutic Agents and Procedures; Volume II, Treatment of Symptoms and Diseases. Philadelphia: F. A. Davis Company, 1925. Pp. 1800.

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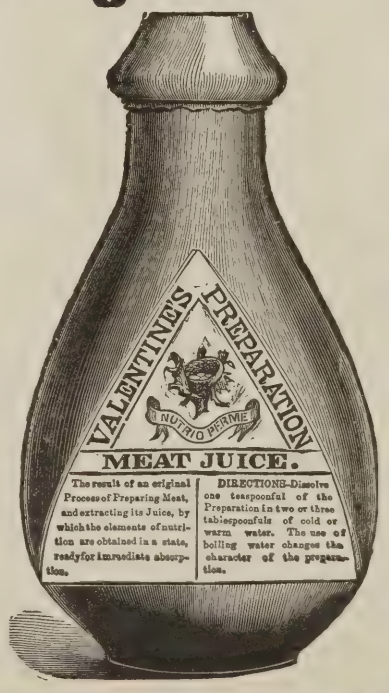
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Miscellany.

South Carolina Has Effective System of Disease Reporting.—Dr. James A. Hayne, State Health Officer of South Carolina and Collaborating Epidemiologist of the United States Public Health Service, has instituted a new and decidedly more effective system of disease reporting by physicians. Each week a card is mailed to physicians for the report of the number of cases of diphtheria, gonorrhea, syphilis, malaria, smallpox, tuberculosis, and certain other diseases. The greater effectiveness of this system of reporting is shown by the fact that in the first month of its operation 734 cases of syphilis were reported as against an average of 245 cases for each of the preceding ten months, or three times as many cases as were reported formerly. There is a still higher rate of increase in the number of reported cases of gonorrhea. Over seven times as many cases of this disease were reported under the new system as were reported formerly.

Smoldering Fires of Yellow Fever.—In a review of the work of the Rockefeller Foundation for the year 1924, by Dr. George E. Vincent, president of the Foundation, the yellow fever situation is commented upon, as follows:

An outbreak of yellow fever in Salvador (seventy-five cases with twenty-two deaths) in the summer of 1924 was an unanticipated episode in a campaign which began in 1918 under the leadership of General Gorgas as head of a commission of the International Health Board. Control work had been carried on in Mexico and Central America, Ecuador, Peru, Colombia, Venezuela, and Brazil, with a reconnaissance on the Gold and Ivory Coasts of West Africa. No case of the fever had been reported from Central America since 1921. It was hoped and believed that with the possible exception of a small focus of infection in Colombia the disease had been eliminated from the entire area which lies between the Rio Grande and the northern boundary of Brazil. This epidemic, however, taught its lessons. It showed the value of keeping a mobile staff of experts on call. Doctors on duty at other points were instructed by cable to go at once to Salvador to help the Government bring the outbreak under control. The promptness with which this was done proved that international organization against disease can be speedy and effective.

The unexpected flareup in Salvador had another result. It forced a careful review of the theory and practice of antiyellow fever work. How was this outbreak to be explained? Had the infection been brought in from outside or had the previous campaign failed to extinguish the fire completely and left embers smoldering? No absolute answer can be given, but there is reason to think that there may be more than was originally supposed of those endemic areas, i. e., cities, towns, or even clusters of villages between which people are constantly passing to and fro and in which the fever is always present. Guayaquil, in Ecuador, which was freed from the disease in 1919, had long been a conspicuous endemic centre from which the fever was distributed by land routes and by ships. Even if the control of mosquito breeding is neglected yellow fever will disappear provided nonimmune persons do not come in from the outside to keep the infection going. But in settled human groups babies are arriving constantly and growing into boys and girls who are susceptible. Children usually have the disease in a mild form; very often it is not even recognized for what it is. Yet from these sick children mosquitoes may become as dangerously infective as from the severest cases. So it may happen that in a large city or a series of small towns the fever is kept alive without anyone realizing it until adult, nonimmune strangers begin coming in. Then smoldering embers leap into flame. A vigilant watch is being kept against such possibilities. The surveys made in Mexico, Guatemala, British Honduras, Nicaragua, Honduras, Colombia, and the Guianas failed to reveal any cases of yellow fever.

The Hookworm as Advance Agent of Health.—In contrast with yellow fever and malaria, hookworm disease is a simple malady, says Dr. George E. Vincent, president of the Rockefeller Foundation, in his review of the work of the foundation for the year 1924. The process by which tiny worms hatched in a warm and moist soil make their way through the skin of a human host and finally come to rest in the small intestine is well understood and can be clearly explained even to the most ignorant. The vermifuges which expel the parasites are simple and cheap. The building and use of sanitary latrines put a stop to the pollution of the soil and protect the population against reinfection. To weaken the hold and bring under control a disease which robs of vitality, stunts, cripples, handicaps, and even kills millions throughout the hot and moist regions of the world is vitally important in itself. The International Health Board is an outgrowth of the original Rockefeller Sanitary Commission which was organized in 1909 to combat the disease in the Southern States. Since then the campaign has been extended to fifty-two countries in six continents and twenty-nine islands of the seas.

But the control of hookworm disease does more than give relief from one malady. It is an object lesson in public health. It shows a community what organized, concerted effort under trained leadership can accomplish. It is in a real sense an advance agent of preventive medicine, an educator of the public. The board has purposely cooperated in the control of hookworm disease as a way of helping local and central governments to establish or extend their general health organizations. Thus in the United States, Brazil, Australia, and elsewhere hookworm units as such have been merged in regular health services.

Elsewhere hookworm measures are continued. In 1924 the board assisted twenty-four states and countries from the West Indias to Siam, Java, and Ceylon to control the disease, and in eight countries made surveys to find out the extent of the hookworm problem. As usual, government appropriations were increased while the board's share diminished. Simple as hookworm disease seems, much is still to be learned about soil pollution, drugs, various effects of the disease according to age, sex, race, etc. So research went on in the Southern States of the United States and in other countries, notably China.

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Child Welfare Legislation.—Current child welfare legislation in the states is summarized in a statement issued recently by the Children's Bureau of the United States Department of Labor. A decrease in the amount and importance of such legislation introduced in the forty-two state legislatures meeting this year compared with 1923, the preceding important legislative year, is noted by the bureau. Information received by the bureau from the states is not complete, however, so that no final conclusions are drawn.

The Children's Bureau review may be summarized as follows:

Child Welfare or Children's Code Commissions.—A children's law commission was created by Rhode Island; the Pennsylvania and Delaware commissions have been continued for two more years; the Utah commission has been discontinued; the New York State commission was discontinued but sponsored 15 bills, seven of which were enacted. The South Dakota commission introduced ten bills, four of which passed in amended form. The Georgia legislature, which is still in session, is considering eight bills drafted by the Georgia children's code commission.

Maternity and Infancy Act.—This act was accepted for the first time by Rhode Island, Vermont, and Hawaii during 1925; forty-three states and Hawaii are now cooperating under the act.

Child Labor.—The child labor amendment was ratified by California, Arizona, and Wisconsin and the House of Representatives of New Mexico and of Montana voted in favor of ratification. Arkansas had ratified in 1924. Both houses in eighteen States rejected the amendment during 1925 (two others in 1924); one house in each of seven other states rejected it (one other in 1924). Authoritative information from other states has not yet been obtained.

State laws relating to the employment of children are known to have been enacted in only nine states—California, Massachusetts, New Mexico, New York, Ohio, Tennessee, Texas, Wisconsin, and Wyoming. In New Hampshire, North Carolina, New York, Rhode Island, and Wyoming, bills to raise the standards of state child labor laws were rejected.

School Attendance.—Laws relating to school attendance were enacted by Massachusetts, Ohio, and Pennsylvania. A bill which would have improved the compulsory school attendance law of South Carolina was reported as defeated.

Child Hygiene.—Measures relating to public health and child hygiene have been considered in a number of states. Bills authorizing the employment of public health nurses by municipalities and counties were passed in Kansas, Michigan, and Missouri. A Connecticut bill would provide for state aid in establishing a public health nursing service. Bills relating to medical inspection in schools, school physicians or school nurses, were introduced in Connecticut, New York (passed), Rhode Island and Minnesota. Oregon passed a law requiring physical examination of all school children during the first month of the school year, providing no objection has been made by the parent. Bills improving birth and death registration passed in Michigan and Vermont but failed in Maine. The status of such bills in Oklahoma and Pennsylvania is unknown. South Dakota passed a law requiring physicians and others to employ certain methods for the prevention of blindness and infections of the eyes of newborn infants. West Virginia introduced bills for licensing and registering midwives. Iowa and South Dakota passed new regulations for the control and inspection of maternity hospitals.

Physically Handicapped Children.—Bills relating to crippled children were introduced in Arkansas, Illinois, Ohio, Oklahoma, and Pennsylvania. Pennsylvania appropriated $250,000 for a state hospital for indigent and other children with surgical tuberculosis and allied conditions. Connecticut, New York, Ohio, Oregon and Pennsylvania passed laws promoting the education of blind, crippled and otherwise physically handicapped children. The Pennsylvania law provides for the enumeration of children between the ages of six and sixteen, who, because of apparent physical or mental condition, are not being properly educated, and for authorizing home teaching by legally certified teachers as an alternative to public school or institutional instruction.

Mentally Defective Children.—Bills relating to the examination, care and training of the mentally defective have been passed by Iowa, Indiana, Michigan, Minnesota, New Mexico, Oregon, Pennsylvania, and South Dakota, and were also pending in Kansas, Nebraska, Ohio, and Wisconsin. Bills for the sterilization of mental defectives were introduced in Colorado, Idaho, Maine, Michigan, Minnesota, New Jersey, Ohio, and Rhode Island. The Idaho, Maine, and Michigan bills are known to have passed and the Rhode Island one to have failed.

Juvenile Courts.—A few bills which would destroy or weaken juvenile courts have been introduced, but so far as present information indicates none has passed.

Dependent Children.—Bills relating to dependent children were introduced in various states. Iowa passed a law requiring the annual licensing of childcaring agencies, institutions and boarding homes. Pennsylvania passed a law providing for the licensing and for regulation of boarding houses for children under three years of age by the state department of welfare. Bills relating to mothers' pensions were introduced in a number of states. South Dakota passed a law making the existing mothers' pension laws applicable to unorganized counties. North Carolina cut its mothers pension appropriation from $50,000 to $30,000. North Dakota passed a law making more strict the procedure through which pensions are obtained.

Adoption.—Acts relating to the adoption of children were enacted by New Mexico, New York, Pennsylvania, and Rhode Island, but failed to become law in California, Connecticut, and Iowa. The fate of the Wisconsin bill is unknown.

Children Born Out of Wedlock.—Laws relating to illegitimate children were passed in New Hampshire, Oregon, and New York. New Hampshire provided that divorce shall not affect the legitimacy of a child born in wedlock unless the decree expressly so provides, and also that children born of a marriage entered into in good faith are legitimate even though the marriage is annulled. Oregon decreed that children of unmarried parents who live as husband and wife for over one year in the State of Oregon shall be legitimate, provided neither parent is married to a third person. New York passed a law changing the procedure of establishing paternity and another law designed to eliminate the word "illegitimate" from school books and statutes and to substitute therefor the expression "children born out of wedlock."

Delinquents.—Measures relating to commitment of delinquent minors and to the establishment and regulation of industrial schools for such persons were pending in a number of states.

Recreation.—Bills to regulate and license all dance halls and amusement halls were introduced in Colorado, Idaho, Kansas, Maine, Minnesota, Ohio, Oregon, Pennsylvania and Wisconsin. The Oregon bill is known to have passed and the Maine bill to have failed. The Illinois bill, which passed the Senate, would prohibit persons under 16 years of age from being present in any public dance hall outside the limits of the city, village or town. The Pennsylvania bill would make it unlawful to permit any person under sixteen to attend a public dance after 9 p. m. Indiana and Vermont have passed laws authorizing the extension of systems of public recreation.

Marriage License Regulation.—Bills relating to marriage license regulations were introduced in a number of states, but according to all available information no important measure was enacted into law.

Maine Legislates Against Spread of Venereal Diseases.—As an additional measure for the protection of the community from venereal infection the Eighty-Second Legislature of the State of Maine passed an amendment whereby superintendents of State, county, and municipal charitable or correctional institutions are required to report to the State Department of Public Health any inmate about to be released and who is afflicted with a venereal disease in an infectious form. The report is to be made not later than fourteen days before the estimated date of release, so that the State Department of Public Health may "take necessary measures to protect others from such infection."

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

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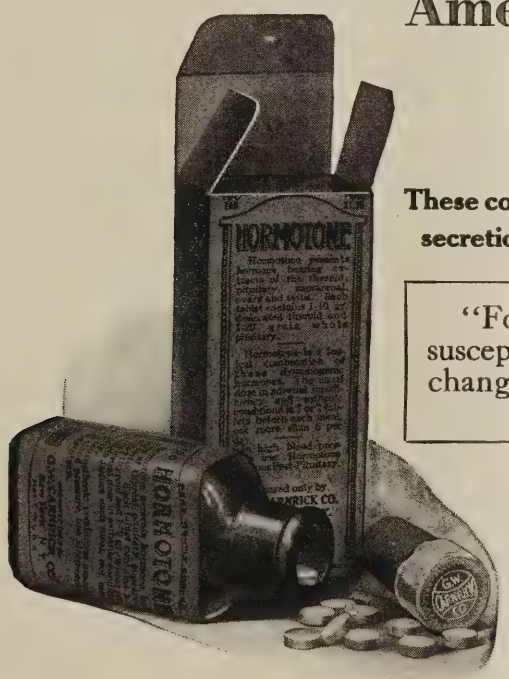

Amenorrhoea
Dysmenorrhoea
Menorrhagia

These conditions are usually disturbances of internal secretions and require internal secretion therapy.

"For the female organism is peculiarly susceptible to physiologic and pathologic changes in the general endocrine system."
Graves—*Gynecology*, 2nd Ed., 1921.

HORMOTONE

restores to normal the endocrine mechanism of menstruation.

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Gonorrhea Apparently Increasing in New York.—Gonorrhea and syphilis not being reportable directly as such to the State Department of Health, the incidence can only be judged by the number of blood specimens or smears which are reported as positive by approved laboratories, says *Health News* for July 6, 1925. The consensus is that gonorrhea is several times as prevalent as syphilis. The figures of this State do not show that the laboratories have received as many specimens for examination for the organism of gonorrhea as for the Wassermann test. The percentage increase of specimens submitted for the first three months of 1925 over the corresponding months of 1924 is strikingly noticeable as shown below:

State Laboratory, Albany, January, 19.69 per cent.; February, 37.45 per cent.; March, 45.33 per cent. Branch Laboratory, New York City, January, 60.34 per cent.; February, 27.69 per cent.; March, 9.88 per cent.

The increase in positive cases was ten per cent. upstate and five per cent. for New York city over the corresponding quarter of last year. This apparent increase may be due to 1, a greater use of laboratory facilities for diagnostic purposes; 2, patients seeking treatment from reputable physicians instead of from drug stores, quacks; 3, increased promiscuity resulting in an actual increase in the incidence of gonorrhea.

Milk Regulation for Panama.—An executive decree regarding milk regulations in the cities of Colon and Panama has been issued recently by the President of the Republic. An abstract of the decree is as follows:

All milk stored, sold or offered for sale, in the cities of Colon and Panama must not contain water or any other extraneous substance added, and must contain not less than three per cent of butter fats and not less than 12 per cent of total solids, nor more than 88 per cent of water, and shall be pasteurized. These standards may be modified and other standards or tests of purity and fitness may be prescribed by the Chief Health Officer of The Panama Canal at his discretion and such modifications or other standards or tests shall have the same force as these regulations. Any milk not conforming to the standards specified above except as hereinafter provided shall be regarded as adulterated, impure or unfit for human consumption and may be seized and destroyed by the Health Officer or his representative at time of inspection in the manner provided for adulterated milk.

Modified milk, skimmed milk, buttermilk and other milk preparations not conforming to the above section, may be sold in the cities of Colon and Panama under a special permit therefor issued by the Health Officer at his discretion, provided such modified milk, skimmed milk, buttermilk or other milk preparation bears a label clearly setting forth its character.

Production of Tetanus Antiserum in Cattle.—Rudolf Kraus (*Wiener klinische Wochenschrift*, January 17, 1924) showed that neutralizing substances against diphtheria antitoxin were demonstrable in the blood of old horses and also the same substances were demonstrable against tetanus antitoxin in the blood of old cattle. These physiological antitoxins are the cause for the greater resistance of old animals aginst these corresponding toxins than that of younger animals. The analogue in man is the Schick reaction. Consequently it is possible to immunize horses against diphtheria and cattle against tetanus with toxins. The antitoxin values with this immunization are just as great in the old animals as in the young animals. Therefore the production of tetanus antitoxin in cattle is advisable. The tetanus antiserum of cattle produces serum sickness much more rarely than that obtained from horses and it should therefore be tried for preventive as well as curative purposes.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LA SCIENCE MEDICALE ET SA VALEUR. Par L. Pron. Paris: Librairie Maloine, 1925. Pp. 248.

L'ANNÉE THÉRAPEUTIQUE. Par L. Cheinisse. Année 1924. Paris: Masson et Cie, 1925. Pp. 186.

ROMANCE OF NEW RUSSIA. By Magdaliene Marx. New York: Thomas Seltzer, 1924. Pp. 225.

ENERGÉTIQUE CLINIQUE. Physiopathologie-Thérapeutique. Par A. Martinet. Paris: Masson et Cie, 1925. Pp. 416.

LA RÉACTION DE FIXATION DANS LA TUBERCULOSE. Par Achille Urbain. Préface de A. Besredka. Paris: Masson et Cie, 1925. Pp. 129.

YESTERDAYS. By Lucy Seaman Bainbridge. Illustrated. New York, Chicago: Fleming H. Revell Company, 1924. Pp. 127.

VARIATIONS DES ARTERES DU PELVIS ET DU MEMBRE INFÉRIEUR. Par le Dr. Louis Dubreuil-Chambardel. Préface du Professeur Nicolas. Paris: Masson et Cie, 1925. Pp. 272.

L'ANNÉE MÉDICALE PRATIQUE. Publiée sous la Direction du Dr. Camille Lian. Préface de M. le Professeur Emile Sergent. Paris: Rene Lepine, 1925. Pp. 525.

THE SURGICAL CLINICS OF NORTH AMERICA. New York Number. Volume V, Number I, February, 1925. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 294.

LA CONDUCTIBILITÉ ÉLECTRIQUE DU CORPS HUMAIN. Par André Strohl. Préface du Pr. G. Weiss. Paris: Masson et Cie, 1925. Pp. 130.

GYNECOLOGY FOR NURSES. By M. J. Seifert, A.B., M.D., F.A.C.S. Illustrated. New York and London: D. Appleton and Company, 1925. Pp. 325.

AUSTRALASIAN MEDICAL CONGRESS. (British Medical Association.) Transactions of the First Session, Melbourne. November 12 to 17, 1923. Sydney: Sydney and Melbourne Publishing Co., Ltd., 1924. Pp. 552.

DEPARTMENT OF HEALTH. Malaria Research Unit, Haifa. Annual Report, 1923. Maintained by the American Joint Distribution Committee in Cooperation with the Government of Palestine. Pp. 62.

THE ELECTROCHEMICAL FACTOR IN NEUROLOGY. A Research in electrobiology. By Ernest H. Pasqué. New Concepts of Physics. By Calvin Samuel Page. Detroit: Atomic Research Association, 1925. Pp. 604.

FORTIETH ANNUAL MEDICAL REPORT OF THE TRUDEAU SANATORIUM. The Twentieth Medical Supplement, together with the eighth collection of the studies of the Edward L. Trudeau Foundation. 1924. Pp. 169.

ANNALS OF RÖNTGENOLOGY. Series of Monographic Atlases. Edited by James T. Case, M.D. Volume Five: Teeth and Jaws, Röntgenologically Considered by Herman A. Osgood, M.D. New York: Paul B. Hoeber, Inc., 1925.

CLINICAL FEATURES OF HEART DISEASE. An Interpretation of the Mechanics of Diagnosis for Practitioners. By Leroy Crummer, M.D. Introduction by Emanuel Libman, M.D. New York: Paul B. Hoeber, Inc., 1925. Pp. 353.

MEDICAL AND SURGICAL REPORT OF THE ROOSEVELT HOSPITAL, NEW YORK. Second Series, 1925. Based on the Work of the Years 1915-1924 inclusive. Illustrated. New York: Paul B. Hoeber, Inc., 1925. Pp. 378.

DIET IN HEALTH AND DISEASE. By Julius Friedenwald, M.D., and John Ruhrah, M.D. Sixth Edition, Thoroughly Revised. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 987.

LABORATORY DIAGNOSTIC METHODS. Pathological, Bacteriological, Serological, and Chemical. Manual for Physicians, Medical Students, and Laboratory Technicians. By John A. Kolmer and Fred. Boerner. New York and London: D. Appleton and Company, 1925. Pp. 338.

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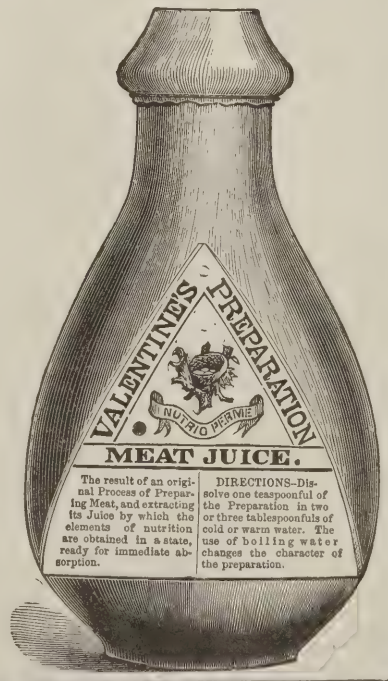
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Miscellany.

Overcrowding Facilitates Spread of Social Diseases.—The National Antislum League of Paris in its recent report states that overcrowding is rampant in certain sections of that city and that it may be viewed as the cause of social disintegration and the moral downfall of the family. "The danger of promiscuity," says the report, "naturally occurs when parents and children sleep in the same room and elder and younger brothers—and very often brothers and sisters—sleep in the same bed."

The housing difficulties in Germany, according to an abstract in *Social Pathology,* issued by the United States Public Health Service, have much to do with the increase of venereal diseases, particularly among children. Due to overcrowding entire families have been infected, and a coincident laxity of moral standards has been found. One report states that a family of nine slept in one room, two married couples being among the number. An editorial in *National Health,* published in London, states that "We are not likely to attain a full measure of success in the control of venereal disease until we have arrived at a solution of the housing difficulty."

But the incubators of lewdness and its frequent associates—gonorrhea and syphilis—are by no means limited to the lower strata of society. Promiscuity is very diffusible, and one of the most essential as well as productive measures for health maintenance is the effort to combat venereal diseases by both mental and physical hygiene. The two leading British societies for the prevention of these diseases are now in accord as to the efficacy of personal cleanliness and disinfection, in the prevention of venereal infection.

Widespread education by publicity regarding the great scourge of the venereal diseases as they affect the child, the family and the State, and the conditions influencing their spread and prevention is very productive of good results and is universally recognized as essential health work. The *Washington Times,* June 26th, gives publicity editorially to "The Curse of Deafness," and points out the causative relation of syphilis to certain types.

The Virtue of Irresponsibility.—If one may judge by their actions, the god of the Gringoes is the clock says the Latin-American correspondent of the MEDICAL JOURNAL AND RECORD. All their waking hours, they worship at his dial, slavishly guided by the auguries of two mechanical hands, and the obsession is so great that special means are provided wherewith to consult this metallic god at night. The fetish of being on time is exalted to the level of a virtue, and we live in perpetual fear lest we shall be late.

As a result, we waste much time and many golden opportunities for blissful dawdling because our phobia urges us to such a degree that we are always early. Our whole existence is hedged about by minutes and seconds, and we are unable to relax into that agreeable and soul satisfying state wherein time is not.

Out of this horological worship grows our sense of responsibility. If a North American says he will do a thing, he generally does it. If he promises to meet you at the spot marked X in the diagram at 10 o'clock ante meridian, Standard time, on April 5, 1924, he will be found standing at the exact focus of convergence at 9:55 a. m. of the day set. We hold this to be admirable and strive to indoctrinate the young with the beauties of promptness, the obligations of engagements, and the sacredness of accuracy. Any infraction of these tenets, we regard as evidences of complete depravity. If we say "there are ten dogs," the statement must be exactly true. We frown upon the addition of a single dog for the embellishment of the narrative, preferring in our besotted accuracy, "nine dogs and a pup" to "eleven vicious bloodhounds." We look askance at the romancer, holding him only one degree less abased than the unpunctual. For the purposes of that brand of humor which we consider particularly our own, one may engage in exaggeration, but it must be carefully labelled as such. In this manner, playful liberties may be taken with truth, but to miss the 7:38 train is a serious lapse from responsibility which will require considerable living down.

Responsibility, that mental infection which was introduced in Colonial times under the name "New England conscience," has gradually spread among the population until it has invaded that fair land where in bygone, sinful days, mintjuleps used to grow; it is throttling the embroidered narrative of range and mine and the panegyrics of the Los Angeles realtor have been brought low. We have become the slaves of the clock and the arch disciples of the square, the plumbline and every other diabolical instrument of precision.

But, fortunately, the Rio Grande has thus far proven impassable and that happy region which extends thence southward to Tierra del Fuego, bows not the knee to these compelling gods. How thrice blessed is it to live in a land where watches are largely worn for ornamental purposes! where it is considered a mark of good breeding to arrive at any function at least thirty minutes (the exact degree of tardiness is of no moment provided it be of respectable length) after the appointed hour! where desiring dinner guests at eight o'clock, one invites them for seven! How joyful is the sensation of traveling on trains which never depart on the scheduled hour, and how boring is the misguided *macho* who always insists that engagements shall be met promptly.

Our brethren who live between Cancer and Capricorn regard as eccentricity the point of fine honor which our delegates observe at international congresses, by arriving at every formation at the exact hour set. Theirs is a more logical and praiseworthy plan permitting completed slumber, leisurely dressing and an unhurried breakfast before attending morning sessions, and a peaceful lunch followed by a refreshing siesta preparatory to the business of the afternoon.

Making an engagement has not been brought to the sordid level of a contract or the sacredness of a religious ceremony in those climes. It is, instead, a delightful conversational interlude which implies no obligation to either party. If one happens to think about it afterward and it is entirely convenient, the rendezvous is visited quite casually, perhaps an hour after the time agreed upon. It is not bad form to

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Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

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As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

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an increase in the development of poisons within the expectant mother's body is inevitable. Therefore, interference with free elimination from the bowels always presents a special menace from the essential increase in the retention of toxins with all their possibilities for harm to both mother and offspring.

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wait a little while for the other engager, if one wishes. Should he be already there or should he stroll in, the thrill of the unusual is added to the pleasure of the meeting. Should he not come at all, the matter is dismissed from the mind and the *faux pas* of mentioning his remission is not committed.

Equally liberal is the custom with regard to statements of number, size and quality. One catches one hundred fish *mas o menos,* a farm is a thousand *hectares mas o menos,* a thing is perfect *mas o menos.* We call it "more or less," but always with subconscious apology. The *mas o menos* habit has no such restrictions. Not that one wilfully commits an untruth; ah no, any such imputation, if such there rudely be, is dispelled completely by that useful phrase.

This delightful practice is the woof and warp of an untrammeled social fabric. One must be careful not to admire any possession of another too warmly, since it will then be given to him. To refuse would be a deadly, but none the less satisfactory, insult. To accept it is dangerous, unless one is prepared to have some cherished property extravagantly admired in turn.

But there is a way out of this dilemma. The giver agrees to send the gift by a servant, an unfortunate being who invariably perishes en route or runs away with the precious present. Perhaps the article is broken, burned or otherwise destroyed. The accidents which may occur to the gift and its bearer are myriad—all of this if one is so tactlessly Gringoesque as to mention the matter—in fact they are incredible!

In cases like this, in fact, in any case in which an agreement has not been carried out, the rule of procedure is simplicity itself. The party of the first part makes an explanation of any sort, care being taken that it shall be in no particular true. The party of the second part answers in kind. Each understands perfectly that no vestige of truth has violated the amenities of social courtesy, and thus, what might easily have proven an annoying incident has been transmuted into a pleasant function.

An American of that scrupulously accurate type so galling to the lover of perfect irresponsibility, was receiver of a tropical bank which had undergone untimely dissolution. Among the assets were a large number of notes, endorsed by many of the best people of the city. The receiver called upon them to meet the notes.

"But, my dear Mr. Receiver, I must protest. I have done business with this bank for many years. It is an outrage that an old customer should thus have his written word questioned. I have endorsed the note. That should be sufficient!"

"I'm sorry, Mr. Endorser. You're no longer doing business with the bank, but with the Court which I represent. The signer of the note can't pay it. You can and must. If you didn't intend to do so, you shouldn't have endorsed it."

"But, my dear Mr. Receiver, you don't understand. That endorsement was merely a social courtesy!"

Three stenographers were engaged to take the discussions at an international meeting. The manuscript, when received, was found to lack about two thirds of completeness. A distressing situation this, but the editor of the proceedings interpolated from his inmost imagination those remarks which everybody should have made, with the result that each speaker marvelled at the brilliancy of his discussions as printed. Thus, responsibility was met perfectly by a thorough irresponsibility which could have only been excelled by neglecting entirely the preparation of the proceedings.

But we must not critically regard everyone who lives in Pan America as less responsible than are we. To make such a sweeping classification would be as unjust as it is unkind. Their responsibility takes another form than ours. It would be hard to induce one of them, save for motives of politeness, to imbibe the potentially dangerous beverages which many of our thirsty citizens have taken to drinking since the Volsteadian era. They are amazed at the way in which the average United Statesan, even some of our lawmakers, rush for a bar the minute they land in a Latin country. In matters of true courtesy their sense of responsibility might well serve us as a pattern.

This may be illustrated by the way in which a dear old Mexican lady inquired after the health of her American friend and her numerous progeny. Apropos of this, it may be noted that the word "Gringo" grew out of the Mexican War, just as did the word "cocktail." We altered "coquequail" to "cocktail," and when our soldiers were filled with this then new concoction they so continuously sang "The green grass grows all 'round," that the natives thought it was our national anthem. "Green-grass-grows," sung under these circumstances, contracts neatly into "greengo" and hence our appellation.[1] Similarly, another of our frequently and forcibly used expressions has quite unmaliciously been applied to us, and we are known commonly as "Goddames." But, back to the illustration—our dear old Mexican lady meeting her American friend, inquired solicitously after her health, that of her husband, her father, her mother, and as a peroration said, "And how are all the little Goddamitos today?" Social responsibility to the ultimate!

The antidote for the infection of punctuality, accuracy and overbearing responsibility, is irresponsibility. Happy the land where nobody is driven by the devil which resides within the clock, artfully hidden behind the smug primness of its china face: how blessed is he who has no curse of exactness laid upon him, but is permitted to follow his own unfettered fancy as he wills: how much liberty has he who is not borne down by the oppressive weight of responsibility!

So far as the United States are concerned, it appears as though the infection is incurable and incapable of eradication. Steadily, it is gaining ground, and without doubt it will one day engulf us all.

For us the outlook is most gloomy, but there is one gleam which illumines the darkness—not far away are happier nations where irresponsibility and other things still flourish, and are there to be had by the seeker after freedom from the irksomeness of life.

[1]One of those disagreeably accurate persons, whose mission in life seems to be the destruction of picturesque myths, states that "Gringo" is a corruption of *Griego,* i.e., Greek, connoting that what a person says "is all Greek" to his hearer.

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Promises Upset in Heredity Theory.—Modern theories of heredity may be refuted by experiments now being made at Stanford University by Professor L. L. Burlingame of the Department of Biology on a plant known as the Clarkia. On first investigation this plant appeared to be contrary to the accepted laws of heredity; however, experiments are being continued to prove that that is merely an explainable deviation.

The present theory is that in every plant or animal there is a definite number of units, known as chromosomes. These units work in pairs. Man has forty-eight of these pairs. These chromosomes furnish the means for transmission of hereditary characteristics. The Clarkia appears to have a varying number of pairs. The correct number seems to be four, but there have been counted from five to eight pairs in the sex cells and from two to seven in the body cells. This is in defiance of all knowledge of heredity.

Professor Burlingame discovered this wide variation while experimenting in hybridization of this plant in the garden. Upon noticing the inconsistency of the plant, he began a thorough study of its properties. He is attempting to prove that it may be explained by the chromosomes having broken up into smaller particles, but still remaining unchanged in their original quantity. If this were true, the smaller parts would be the same size as the sum of the proper number of full sized chromosomes. Owing to the irregularities in their shapes, however, great difficulty is being found in measuring them.

This is the only known case in which the number of chromosomes varies through there may be others yet undiscovered. Professor Burlingame believes that the explanation will be in accordance with the laws as they are now understood, and is attempting by experiment to confirm his theory.

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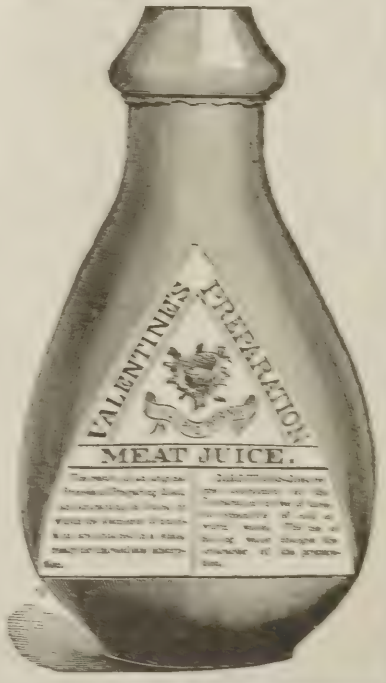

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Miscellany.

Puerperal Hemiplegia.—James E. Talley (*Medical Clinics of North America,* November, 1924) states that puerperal hemiplegia has been attributed to thrombophlebitis, embolism, cerebral congestion and edema, cerebral hemorrhage, brain abscess, and even severe anemia. It is a rare condition, and yet enough cases are reported with autopsies to indicate that thrombophlebitis and embolism are the underlying causes more often than cerebral hemorrhage. It is usually a hemiplegia. Both extremities need not be equally affected, though the arm is apt to suffer most. Monoplegias occur. A primary partial aphasia is sometimes the forerunner. Just how often there is a primary phlebitis in pelvis or leg, frank or concealed, is uncertain.

In puerperal infections, all the elements necessary to thrombus formation are present—bacteria to injure the intima, sluggish circulation to favor the deposition of blood platelets on the necrotic wall, which sets in motion the chemical changes leading to clotting. Streptococci, staphylococci, and other pyogenic bacteria are chiefly concerned, and they all show a great predilection for the veins. Puerperal thrombophlebitis may be found in uterine, pelvic, iliac, femoral, saphenous, or any veins in these regions. Disturbed blood flow appears to be an important factor in thrombus formation. The thrombophlebitis may remain localized in the lower part of the body, or it may spread by way of the blood stream of lymphatics. The degree of latency in pelvic thrombophlebitis is remarkable.

Cerebral embolism is rare. A simple embolus interfering with less than an entire lobe of the lung may give rise to little circulatory disturbance owing to the rich anastomosis of the pulmonary artery. Large emboli block the pulmonary artery and kill, not so much from their influence on the lung as from the sudden strain thrown upon the heart. Lesser emboli give a picture of pleurisy or pneumonia, perhaps pulmonary edema, or they may remain quiescent in the spleen or kidney. Some cases show at the same time pulmonary embolism, hemiplegia (cerebral embolism) and embolism of superficial veins. These multiple emboli arise in a recurrent endocarditis. Infarction of the brain is extremely common; meningeal involvement is symptomless. If a small vessel alone is involved, there may be a temporary lapse from consciousness or none at all. There may or may not be variously localized palsies. If the branch is large, symptoms like apoplexy occur, unconsciousness, a flaccid palsy more widespread at first, and a limited palsy will persist corresponding to the part of the brain destroyed. If the emboli are septic the first effect is mechanical, and eventually these areas resemble an abscess. This explains the transitory aphasias and hemiplegias found in some histories. Puerperal embolism should lead to the search for an endocarditis recurrent during pregnancy or arising from puerperal infection. The infection may spread through the capillaries and lymphatics.

Cerebral hemorrhage may occur before, during, or after delivery. Hemiplegia occurring during the second or third weeks postpartum is almost always due to infection; later, and even during the first week postpartum, it may be due to infection. Distinct mitral disease, especially stenosis or a history of acute rheumatic fever or chorea, are very suggestive. Causes for defective bloodvessels must be borne in mind—lues, nephritis, and eclampsia. The attacks following delivery are more apt to lack uremic symptoms. The hemorrhage and palsy develop usually in close relationship to convulsions. In these eclamptic or albuminuric palsies hemorrhage is not always the basis; transient congestion and edema of the brain sometimes give origin to the socalled serous apoplexies, whose symptoms fluctuate and improve so rapidly that they may be thought hysterical. Occasionally varices are responsible for these hemorrhages. Hemorrhage from the choroid plexus is also described.

Brain abscess causing puerperal hemiplegia is usually a part of a frank puerperal septicemia. A marked anemia due to severe postpartum hemorrhage may be one of many factors leading to puerperal hemiplegia, but neither alone or combined are they sufficient to stand as a sole etiological factor.

The differential diagnosis between cerebral thrombophlebitis, embolism, hemorrhage, or serous apoplexy is difficult if not impossible. In cerebral thrombosis the presence of a known phlebitis is suggestive. Ordinarily the palsy is usually less brusque than in hemorrhage or embolism. There may be the antecedent headache, slight fever, accelerated pulse, paresthesia, paresis, and aphasia. The hemiplegia is, on the whole, slower of development. Embolism, like hemorrhage, is brusque. The presence of a phlebitis, known or suspected, or of an endocarditis, especially mitral, are more than suggestive. Leftsided occlusion with rightsided hemiplegia is more often due to embolism. Cerebral hemorrhage is sudden, the palsy complete early. Diseased vessels, as in lues and nephritis, are suggestive. In eclampsia the presence of nausea, vomiting, visual disturbances, edema, albuminuria, if present, are all helpful. The palsy due to cerebral congestion or edema in this connection may be transitory or changeable.

The prognosis of puerperal hemiplegia is grave but not hopeless; the permanent disability is never so great as the initial palsy. The treatment is mainly a question of asepsis, and of as little vaginal examination as possible. Massage and manipulations in phlegmasia are absolutely contraindicated.

A Biophysical Law Governing Surgical Mortality.—G. K. Crile (*Surgery, Gynecology and Obstetrics,* April, 1924) says that although the electrochemical theory interprets well the normal and the pathological phenomena of man and animals; although the numerous predictions based upon this theory were established by the more exact methods of physics; although it has furnished a plausible suggestion as to the line of evolution from the atom to man; although the theory has stood the crucial test of the surgical clinic by providing a scheme of management which has produced the shockless operation, the theory is not yet proved, and will not be proved until the equivalent of a living cell is constructed; until the equivalent of life is artificially made. Nevertheless, from previously accepted facts, from clinical observations, and from the evidence of experimental researches in our laboratory of biophysics he concludes as follows: 1. That electrical phenomena are coexistent with living phenomena because electricity is detected in every living plant or animal and is absent in the dead. 2. That electricity is manifested in every act of the living and is probably the socalled spark of life. 3. That there are great numbers of different kinds of electric circuits in animals. 4. That the source of electricity in the cells is oxidation. 5. That oxidation in the cells of the organism is initiated and governed by electricity. 6. That electricity is accumulated on the lipoid films of the trillions of cells. 7. That each of the trillions of cells is a diminutive electrochemical unit. 8. That during life there is a difference of potential, a state of unbalance within the organism. 9. That death is equilibrium of potential. 10. That there is a universal pattern of the living in the form of bipolarism. 11. That in the nonliving no less than the living exists the universal pattern of bipolarism. 12. That the pattern of bipolarism runs in continuity from atom to man. 13. That man is an electrochemical mechanism, a giant ameba climbing up the slippery banks of time.

Surgery of the Thorax.—D. B. Phemister (*Surgery, Gynecology and Obstetrics,* April, 1924) says that expansion of a collapsed lung in acute empyema with drainage where stabilization of mediastinum has occurred may be the result of three factors: 1. The pull of the contracting granulations on the visceral pleura at its reflection on to parietal pleura as the two layers fuse, and the cavity is gradually obliterated. 2. The positive pressure within the collapsed lung produced by the entrance of air from the opposite side during forced expiration. 3. The negative pressure in the empyema cavity present during inspiration, when the diameter of the drainage opening is smaller than that of the main bronchus on the affected side. Of these three factors, the pulling out of the lung by the healing granulations is the one of greatest importance. With the establishment of suitable conditions, the empyema wound heals and the cavity is obliterated by granulation tissue and the fusion of its walls. Free drainage does the most toward procuring healthy granulations on the pleural surfaces. The author doubts if anything is accomplished by irrigation of the pleural cavity in acute empyema, except in those cases where there are large amounts of filbrin or in the very exceptional cases where sloughs are present, and then the irrigations do not need to be continued beyond the time of their removal. Fibrin is not nearly as harmful in empyema as some have imagined.

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Fate of Fractured Carpal Navicular.—K. Speed (*Annals of Surgery,* October, 1924), after a study of a series of these fractures at varying periods after the original trauma, says that the original fracture interference with the blood supply cuts off nutrition to the cancellous structure. Should the condition be recognized and sufficient rest be offered the bone, revascularization with a saving of the bone may result. In the neglected cases bone death rapidly ensues, and the process of malacia or osteoporosis begins, ending in complete absorption of the main mass of the bone. As far as the author has been able to determine we must revise our ideas about the influence of the synovial fluid on these fractures. It has formerly been taught that the irritative effect of the synovial fluid led to destruction of the bone, but the author's sections seem to prove just the opposite, namely, that the synovial fluid offers sustenance to the superficial layer of cartilage and cortical bone and maintains the nutrition of the cells for years. The new bone formation from surrounding bones must be a reaction to the presence of the dead navicular and is protective, that is, it is a natural effort to stiffen the wrist to inhibit motion and consequently relieve the patient from pain. Using the clinical and pathological evidence obtained from a series of these injuries, there is no hesitation in advising immediate and prolonged splinting of the fractured and undislocated navicular. If dislocation of fragment has occurred, the author believes operative removal is indicated. Certainly in all fractures unrecognized more than a few days operative removal of the whole bone promises the quickest return of function in the hand and wrist. Nothing is gained by delay.

Chronic Mastitis.—Geoffrey Keynes (*Lancet,* September 1, 1924) states that the breast is a secreting gland which shows periodical activity from birth to the menopause. The normal, nonlactating breast has no outlet through the nipple for the discharge of its secretions. Secretion must therefore be balanced by reabsorption. Chronic mastitis is manifested by dilatation of ducts and acini, accumulation in them of the products of epithelial activity, infiltration with lymphocytes, fibrosis, and epithelial changes. The distribution of all the processes is very erratic. Chronic mastitis is commonest in women, but occurs also in men. It first appears in the second decade, but is most often seen in the fifth. It appears earlier in single women than in women who have borne children. The condition is not bacterial in origin, toxemic or traumatic, nor is it related to involution changes in the breast. The cause of chronic mastitis is probably to be found in chemical irritation due to stagnating secretions and epithelial débris. This cannot be proved until the chemical changes have been investigated. Chronic mastitis, though very often associated with carcinoma, has not been proved to be due to the same cause. In its more advanced stages it must be treated by operation. At an earlier stage natural drainage may be tried, or x rays may be applied.

Jacobaeus Method of Intrathoracic Cauterization of Pleural Adhesions in Pneumothorax.—O. Weber (*Schweizerische medizinische Wochenschrift,* October 30, 1924) reports upon five cases in which pleural adhesions were cut with a galvanocautery under the guidance of a thoracoscope. After the localization of the adhesions in the roentgenogram, the apparent course of the visible adhesions are projected upon the skin with a skin pencil. The site of introduction of the thoracoscope is determined by the position and the course of these adhesions. It should be selected with a view to reaching all the existing adhesions. The author prefers the third to the fifth intercostal spaces, between the middle axillary and the mamillary lines, for the introduction of the thoracoscope and the cautery. Local anesthesia is used.

One should not be surprised at finding more adhesions on thoracoscopy than are demonstrable in the roentgenogram, and also differences in the form and thickness of the individual bands. The cautery point is then introduced through the thoracoscope and the bands of adhesions are divided a millimetre at a time. With the proper regulation of the heat the coagulation process is a gradual one and all bleeding is thereby controlled. The cautery should be moved about only under direct vision to avoid injury of normal tissues. In order to avoid emphysema of the soft parts it is necessary to maintain the pneumothorax pressure around zero or slightly negative before withdrawing the instruments, and in the presence of an existing irritative cough sedatives should be administered. The thoracoscopy may be associated with a short, severe clonic spasm in the arm on that side when the parietal pleura is touched with the thoracoscope in the region of the axilla. The operation may be followed by serous pleurisy and less often by empyema. Nevertheless the author believes this procedure to be preferable to thoracoplasty if complete collapse of the lung can be obtained after it.

Primary Carcinoma of the Lung.—K. Playfair and C. P. G. Wakeley (*British Journal of Surgery,* October, 1924) present the following conclusions:

1. Primary carcinoma of the lung, while still correctly regarded as a rare condition, is probably of more frequent occurrence than is usually admitted. Cases reported from America during the past five years are very much more numerous than in this country. This may be a true indication of its relative incidence in the two countries, but it is to be doubted if it is so. Absence of routine autopsy here, and perhaps a reluctance to record such cases, may account for the apparent difference.

2. The etiology is little understood; but the fact that chronic inflammatory affections precede this type of carcinoma may be a factor of importance, as is frequently the case in carcinoma elsewhere. Chronic bronchitis originating from respiratory lesions of influenza may be one of the most important precursors of pulmonary carcinoma.

The pathology is still obscure. Although many cases are readily classified histologically, many others, especially advanced cases, must remain unidentified as regards their exact origin.

3. We would emphasize the need of a constant consideration of primary pulmonary neoplasm in all cases presenting any chronic lung symptoms, such as shortness of breath, cough, hemoptysis, and thoracic pain. It is upon an early and correct diagnosis that the future of surgery and radiotherapy in treatment must depend.

Diagnosis must primarily depend on a detailed and correct correlation of the history and clinical observations, while radiography, a useful adjunct at times, is too often unreliable. Degenerate carcinoma cells when present in the sputum are diagnostic, but this is a rare occurrence, and may be overlooked during the routine examination for tubercle bacilli.

4. Surgery, with intratracheal anesthesia, and possibly the simultaneous administration of radiotherapy, offer the only means of eradication of this disease; but progress must be slow until the early symptomatology is more generally recognized.

The Relationship of Chronic Endocervicitis to Focal Infection with Special Reference to Chronic Arthritis.—Laura M. Moench (*Journal of Laboratory and Clinical Medicine,* February, 1924) studied bacteriologically a series of eighty-two miscellaneous cases with leucorrhea, thirty-eight strains of which were used for animal inoculation. In these studies the streptococcus was the organism of importance, and the more saprophytic flora played relatively unimportant parts. The histories of twelve patients are given who showed joint conditions and an infection of the cervix, whereby it appears that cervical streptococci have a selective affinity for the joints, suggesting a relationship with Rosenow's elective localization theory in focal infection. The antigenic properties of the cervical streptococci suggest low virulence, but high specificity of these strains. A modification of Kennedy's method of interstitial injection substituting equal proportions of gentian violet and neutral acriflavine in varying dilutions for his ethyl alcohol was used for treatment. Several cases studied were rendered bacteria free following a single injection, and a second injection usually rendered the canal sterile.

Carbon Dioxide Treatment in Acute Alcoholic Intoxication.—F. T. Hunter and S. G. Mudd (*Boston Medical and Surgical Journal,* June 5, 1924) suggests that, inasmuch as the majority of deaths from alcoholism at the present time result from the ingestion of lethal doses of alcohol and not from particular poisons in the beverage, carbon dioxide administration would be of value in the treatment of all cases of alcoholic coma. In cases of methyl alcohol poisoning carbon dioxide would be even more efficacious as, due to its lower boiling point, it has a higher partial pressure than ethyl alcohol, both being at the same concentration.

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Causes of Loose Bodies in Joints.—D. B. Phemister (*Journal of Bone and Joint Surgery*, April, 1924), sums up his study of the etiology as follows:

From a consideration of the evidence for and against the various theories of causation of the classical loose bodies that have here been enumerated, the author is forced to the conclusion that an entirely satisfactory explanation has not yet been offered. The lesion does not seem to be a complete intraarticular fracture. If it were, fragments detached from sources other than the lateral surface of the mesial condyle of the femur, the patellar surface, and the capitellum of the humerus should as regularly persist as loose bodies in the joint, which is not the case. Incomplete or subchondral fracture passing between cartilage and bone or through bone is a more plausible explanation, although there are many objections to it. Nonunion would have to follow and the cartilaginous bridge would be severed subsequently, either by trauma or by absorption. Nutritional disturbance in the partially detached portion would favor the occurrence of nonunion, but the partial fixation would greatly increase the chances of union with its bed. It is possible that the cause of nonunion is general and is not understood, as is the case in a certain percentage of ununited fractures of the shaft. Articular cartilage is devoid of nerve supply and there is extremely little sensation in the cancellous bone which it overlies. It is possible that a fracture of the articular surface might result from undue violence and be accompanied by little or no pain. Such injuries would easily be overlooked or forgotten, and this would account for the frequent absence of a history of trauma of such violence as would ordinarily be considered necessary to produce such changes.

Primary necrosis of the portion which becomes detached has been shown not to occur in at least a certain percentage of cases, and portions killed experimentally by radium do not slough into the joint. Arterial embolism, either fatty or bacterial, cannot be accepted as the cause, for there is no plausible reason why it should be limited to the particular regions of the ends of the bones from which the loose bodies spring. There has been no definite pathological evidence presented in support of embolism. Constitutional disturbance of the bones may play a rôle, but not enough clinical or pathologic data are at hand to warrant one in classifying the zones of separation as identical with the clefts of Looser which form in the shafts in such diseases as late rickets and osteomalacia. No inflammatory socalled changes have been observed in loose body, and osteochondritis dissecans has never been observed during the stage of separation of a fragment consisting of bone and cartilage.

Phenoltetrachlorphthalein in the Study of Liver Function.—W. W. Boardman and G. D. Schoonmaker (*American Journal of the Medical Sciences*, November, 1924) present the following conclusions: 1. In phenoltetrachlorphthalein we have a valuable means of studying the functional activity of the liver. 2. The findings by the duodenal tube method and the Rosenthal method are apparently of equal value and significance. 3. Therefore the choice of method ordinarily rests with the individual preference of the investigator, except in cases of common duct obstruction, or when for one reason or another the passage of the tube is contraindicated or impossible. Our own preference is for the duodenal tube method whenever possible, because of the natural objection on the part of the patient to the injection of large amounts of highly colored material intravenously and because of the danger of induration and thrombosis with these large injections which are necessary in the Rosenthal method. 4. With the duodenal tube method we would recommend the adoption of the fifty mg. dose as the standard, because there is no apparent advantage in the larger doses. 5. Because of the impossibility of collecting all the bile excreted over a given period quantitative estimations by the duodenal tube method are of no value. 6. With one hundred and fifty mg. of the dye an initial appearance time of eleven minutes or over and a maximum appearance time of fourteen minutes or over, would seem to indicate liver disturbance. In normal cases the time between the initial and maximum appearance of the dye rarely exceeds three minutes. In pathological cases this time is frequently but not uniformly increased. It is our impression that the maximum appearance time may occasionally be influenced by the factor of dilution by the gastric contents and, therefore, be less reliable than the initial appearance time.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LENOX HILL HOSPITAL. Fifty-fifth Annual Report, for the Year 1924. Pp. 83.

NEW ENGLAND PEABODY HOME FOR CRIPPLED CHILDREN. Report, 1924, 1925. Pp. 61.

UNITED FRUIT COMPANY, MEDICAL DEPARTMENT. Thirteenth Annual Report, 1924. Boston: United Fruit Company. Pp. 247.

MORTALITY STATISTICS, 1922. Twenty-third Annual Report. Bureau of the Census. Washington: Government Printing Office, 1925. Pp. 656.

INTERNATIONAL CONFERENCE ON HEALTH PROBLEMS IN TROPICAL AMERICA. Proceedings, 1924. Boston: United Fruit Company, 1924. Pp. 1010.

STATE HOSPITAL COMMISSION, NEW YORK. Thirty-sixth Annual Report, July 1, 1923 to June 30, 1924. Legislative Document (1925) No. 14. Pp. 241.

GESCHICHTLICKE ENTWICKLUNG DER MEDIZIN. In ihren Hauptperioden Dargestellt. Von Dr. Georg Honigmann. München: J. F. Lehmann, 1925. Pp. 132.

PATHOGÉNIE DES CALCULS BILIAIRES ET INDICATIONS OPÉRATOIRES. Par Thorkild Rovsing. Traduction du Dr. Saint-Gène. Paris: Masson et Cie, 1925. Pp. 125.

LA TÉTANIE INFANTILE. Recherches clinques et experimentales. Par R. A. Turpin. Préface du Docteur E. Lesné. Paris: Masson et Cie, 1925. Pp. 223.

THÉORIE DES VITAMINES ET SES APPLICATIONS. Essais de Vitaminologie. Par Jean Lorenzini. Avec Préface de Charles Richet. Paris: Masson et Cie, 1925. Pp. 88.

DIE UNEHELICHE MUTTERSCHAFT. Eine sozialgynakologische Studie, zugleich ein Beitrag zum Problem der Fruchtabtreibung. Von Dr. Egon Weinzierl. Mit 4 Kurven und 10 Tabellen in Text. Berlin and Wien: Urban and Schwarzenberg, 1925. Pp. 79.

BODY BUILD, ITS DEVELOPMENT AND INHERITANCE. By C. B. Davenport. Eugenics Record Office, Bulletin No. 24. Carnegie Institution of Washington. Cold Springs Harbor, 1925. Pp. 42.

EINFUHRING IN DIE KLINISCHE MEDIZIN. Eine kurze Darsellung ihrer Gruhegriffe. von Walter Marle. 2 Band. Mit 220 abbildungen in Text. Berlin und Wien: Urban & Schwarzenburg, 1925. Pp. 565.

UBER DIE ORGANFIKTION. Eine von Pathologischen Zustânden Ausgahende Biologische Studie. Von Otto Bunnemann. Beiheft zu den Annalen der Philosophie und Philosophischen Kritik. Leipzig: Felix Meiner, 1925. Pp. 93.

HAND ATLAS OF CLINICAL ANATOMY. By A. C. Eycleshymer, Ph.D., M. D. and Tom Jones, B. F. A. With special dissections by O. E. Nadeau, M. D. Illustrated with 395 line drawings, mostly in color. Philadelphia and New York: Lea & Febiger, 1925. Pp. 424.

STUDIES IN PSYCHIATRY, VOL. II. By Members of the New York Psychiatrical Society. Nervous and Mental Disease Monograph Series No. 41. Washington and New York: Nervous and Mental Disease Publishing Company, 1925. Pp. 233.

DIABETES. Its Treatment by Insulin and Diet. A Handbook for the Patient. By Orlando H. Petty, M. D., F. A. C. P. and William H. Stoner, M. D., F. A. C. P. With Illustrations and Tables. Second Edition. Philadelphia: F. A. Davis Company, 1925. Pp. 133.

DISEASES OF THE EAR, NOSE AND THROAT. By Harold Hays, M. D., F. A. C. S. Illustrated with 495 Halftone and Line Engravings in the Text, and 55 Full Page Plates, Nearly All in Colors. Philadelphia: F. A. Davis Company, 1925. Pp. 961.

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Miscellany.

The Speed of Ambulances.—Traffic everywhere gives way, as it should, to the motor ambulance. But that is no justification for the speed at which these ambulances are occasionally driven. In the capital cities of both England and Ireland the efficiency of the ambulance service is very high. No time is lost in despatch, and the handling of patients is both gentle and free from unnecessary delay. Why therefore any hurry on the road? In a drive of a few miles through the city the careful driver is seldom more than a minute or two slower than the rash one, and despite popular belief to the contrary these few minutes are very seldom of importance to a patient. We feel that the drivers of our excellent ambulances should be in this respect superior to human weaknesses. It is a failing common to many motor drivers that they imagine it is possible to gain time by hurrying through crowded streets. On country roads few accidents are due to speed alone without carelessness, but many city accidents are due solely to the attempt of drivers to go a little faster than the stream of traffic.—*Medical Press and Circular,* August 3, 1925.

Nails! Nails! Nails!—In analyzing reports of accidents, ones attention is immediately arrested by the excessive number of casualties due to nails as compared to those due to any other particular cause. One day's mail at the New York City office of the State Department of Labor contains the first report of an average of thirty accidents from nails. This average was gained through noting the reports for five different days over a period of one month. Out of 150 such reports, 37 accidents were reported as infections with loss of time; 45 showed lost time and 68 no lost time. Since in many cases the first report is mailed shortly after the accident, it is certain that a percentage of the 68 no lost time accidents would subsequently show some loss of time. Using thirty accidents a day as a basis of reckoning, we have 9,000 for a 300-day year for the Metropolitan section alone. Should this be equalled by the balance of the State, there would be 18,000 a year. Add to this figure the accidents that cause no loss of time which may not be reported and the exposure to the nail hazard commences to show its seriousness. One thousand three hundred and thirty-eight accidents due to nails were compensated in one year in New York State.

It can well be said that nails "attack every part of the human body." The reports state, in part: "Stepped on nail in floor," "stepped on nail in board on floor," "nail in guard rail tore his scalp," "nail flew from box while loading truck, infected wound on nose," "while stuffing paper in barrel, punctured arm on a nail," "nail in bench tore leg," "rolling barrel, a nail caught tip of little finger on right hand pulling off part of the nail and tip of little finger," "while packing a case the cover, which was full of nails, fell down, the nails going into his hand," "fell down and a nail punctured stomach," "stick with a large protruding nail fell onto hand," "driving a nail it flew into face cutting cheek," etc., etc.—Robert B. Northrup, *Industrial Hygiene Bulletin,* September, 1925.

Antievolution Movement Ignored by Publishers.—Evolution stays in most schoolbooks. That at least seems to be the verdict of American publishers. In response to an inquiry from Science Service, addressed to thirty-five publishing firms, who among them supply the great bulk of the books used in American schools and colleges, thirty-three answered that they were making no changes in their texts to meet the demands of the antievolutionists. One large firm replied, "We are not at present prepared to make any definite statement," and one did not answer at all. None seemed willing to state that any changes were being made. One concern stated that in a new work intended for high school use the matter was "tactfully handled," but that evolution remained in none the less. Others were more emphatic; answers like "Certainly not!" and "Antievolution has no standing with this firm" were characteristic. A vexed question has been the possibility of getting out modifications of standard texts for use in regions where the antievolution feeling is strong. For the most part, the publishers answer with some variant of the statement of one of the largest producers of textbooks for secondary schools: "We are not preparing any special editions of our books for use in states where evolution teaching is prohibited or discouraged."

Insanity.—Many instances could be recalled of persons who at one period have been stigmatized as insane for holding opinions and advocating methods which in after years have gained for others the approbation of the learned. Aubrey tells us that Harvey was considered a madman by many of his contemporaries for publishing his theory of the circulation of the blood, and that he lost much practice in consequence. At the trial of Dr. John Elliott for the murder of Miss Boydell in 1787 the plea of insanity was raised on the ground that he had published some opinions on solar light which induced the belief that he was laboring under mental derangement. These actual observations were afterwards affirmed by Herschel, who received the homage of the scientific world for doing so. Emanuel Swedenborg, in the *Dædalus Hyperboreus,* which was first published in 1716, briefly described a flying machine consisting of a light frame covered with strong canvas, provided with two large oars or wings moving on a horizontal axis, but arranged so that the upstroke meets with no resistance while the downstroke provides the lifting power. "It seems easier," he says, "to talk of such a machine than to put it into actuality; for it requires greater force and less weight than exists in the human body. The science of mechanics might perhaps suggest a means, viz., a strong spiral spring." He knew that his machine would not fly, but he made the suggestion as a start, confident that the problem would be solved in time. That was given to the world in 1716. One hundred and fifty years later (about 1860) the late Dr. Henry Maudsley adduced Swedenborg's anticipations of the flying machine as one of the evidences of his mental aberration. There is much in Swedenborg's philosophy which deserves the consideration of the scientific student. We refer to the inquiry and investigations contained in the *Animal Kingdom,* which was published just before his so-called "Illumination."—*Medical Press and Circular,* July 22, 1925.

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Poisoned Through the Skin.—Most of us are inclined to think that the skin is a great protection against absorption of poisonous substances. Surgeons, for example, often scrub their hands with bichloride of mercury solutions and put on rubber gloves without bothering to dry the hands. Bichloride poisoning might be acquired in this way. Other poisons are sometimes absorbed through the skin. For instance, a Philadelphia painter spilled a large quantity of wood alcohol over his clothing by accident, and became blind. The doctors say the wood alcohol went through the skin into the blood, and was carried to the optic nerve, and so did the damage.

West Virginia Has Injunction and Abatement Law.—The West Virginia State Department of Health is making plans for the enforcement of the Injunction and Abatement Law enacted by the State legislature and effective July 15. The law provides for the closing as a nuisance of any place used for purposes of prostitution, assignation, or lewdness. A suit in equity may be brought by the attorney general of the State or the prosecuting attorney of the county wherein the nuisance exists. Should public officials fail to enforce the law, a private citizen, resident, or taxpayer may bring in the name of the State a suit in equity to close by injunction a house of prostitution, or one used for purposes of assignation, or lewdness. The law permits the abatement of such a nuisance and perpetually enjoining any person from further maintenance thereof.

According to the United States Public Health Service, there are still ten States without legislation for this purpose. Texas has a law without the abatement feature; the New Jersey law was declared unconstitutional in 1919; and the Maryland law became ineffective two years after the World War

Canal Zone Rain Fall Record for the Year 1924.—The Panama Canal's hydrographic records for the year 1924 show that the Chagres river watershed off flow was but ninety-three per cent. of normal and but eight per cent. more than the normal yearly amount of water come into Gatun lake. In round numbers eight per cent. of this Gatun lake inflow evaporated; slightly more than twice that much was used in locking ships; twenty per cent., or about three per cent. more than that used for locking ships, passed through the hydroelectric turbines to make power at the spillway; less than one per cent. escaped as leakage or was consumed as water through the mains and fifty-five per cent. was washed over Gatun spillway.

A rainfall oddity of the year was that in August the Pacific side had more rainfall than the Atlantic side, being as much above its usual habits as was the Colon side below.

The date of the initiation of the present dry season appears to be about December 12th. This was evidenced by the beginning of the northerly trade winds and the change in humidity. However repeated cold northern storms gave intermittent showers and cloudy weather on the Pacific side, making a transition period up to January 12th. The generally favorable condition for dry season water supply need for much Miraflores made power, unlikely. In fact, the January Gatun lake inflow was a little more than normal.

Syphilis in Porto Rico.—The newly established *Porto Rico Health Review,* issued by the Department of Health, makes the following comments on syphilis:

"Although we have no exact knowledge of how much syphilis there really is in Porto Rico * * * we feel sure that it ranks high, if not the highest among the causes of death. The advanced symptoms of this disease are classified by the general terms of apoplexy, Bright's disease, aortic insufficiency, stenosis, etc. * * *. At the prenatal clinics we daily find an alarming proportion of syphilitic mothers * * *. It is not surprising that we still have an infant mortality of 128 per thousand or twenty-five per cent. of all deaths. Statistics show that at least seventy-five per cent. of syphilitic children die under the first year of age. Syphilis is a problem of public health rather than a matter of morals; it is much more controllable than tuberculosis * * * and inasmuch as its removal from the Island will rid us of this plague, all efforts and expenses for such a noble end are justified."

Care of Dependent Children.—"There is no place like home" for children, according to the Children's Bureau of the U. S. Department of Labor. If institutional care is necessary, however, the Bureau urges that the institutions be as homelike as possible. Such a children's institution is illustrated by a new model exhibited by the Bureau at Washington during the recent meeting of the International Council of Women.

This model shows a miniature "cottage institution," pleasantly located in the midst of a rolling countryside boasting a brook or small river, woods and open meadows—ideal surroundings for growing children. A paved road and electric trolley connect the institution with a nearby town or city, the outskirts of which are represented in the model by miniature houses, churches, schools, stores, and even a moving picture theater.

The institution itself as shown in the model is far different from the conventional idea of an "orphan asylum." Eight small cottages, looking like very attractive bungalows, each surrounded by shady lawn, provide living quarters for approximately 100 children. Each cottage would, in real life, accommodate 12 children, a house mother and her assistant. The children of each house would have their own dining-room and living room, and the whole atmosphere would be that of a big family. Conveniently near all the cottages is a playground with all kinds of apparatus, a gymnasium, a baseball diamond, a swimming pool, and individual gardens for each child, affording ample facilities for recreation and exercise. Other buildings included in the institution are an administration building, a reception and isolation cottage where new arrivals are housed, a superintendent's house, a farmer's cottage, a big barn, a central power house, a garage, and a central laundry. The children's cottages are all one-story. The general buildings are in most cases two stories. There is no school or church connected with the institution because it is considered desirable for the children to attend the town churches and the public school, thus making normal contacts with the community.

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Syphilitic Insane Cost New York $580,762 Annually.—The State Hospital Commission reports that for the year ending June 30, 1924, 911 of the insane people admitted to institutions owed their insanity to syphilis. The syphilitic insane stay in a State institution an average of one and one-half years. The cost per year for each patient is $425 which makes an average total cost of $637.50 for each syphilitic insane person. This makes an estimated cost for care of the 911 syphilitic insane admitted during the year $580,762. The care of these venereally infected persons is a heavy burden on the taxpayers.

Tuition Fees and Scholarships in Medical Schools.—As shown in the statistics published this week, the average tuition fee for each student is now $236, or just double what it was in 1910. In 1921 the average fee paid by each student was $185, in contrast with which the actual cost of his medical training was $655—more than three times what he paid in fees. With the greatly increased equipment in our medical schools, the larger number of salaried expert teachers, and other expensive developments, the average cost per student is now many times greater than it was in 1910. In that year several medical schools reported that all costs were paid from students' fees, and some were said to have had a surplus remaining. Because of the greatly improved instruction, students who can afford to do so should be expected to pay at least a fair proportion of the cost, and a reasonable increase in tuition fees was justifiable. It has been generally recognized that the full cost of maintaining the modern medical school cannot be met from students' fees, so that additional funds are now provided from state aid or private endowment. Recognizing the desirability of financing some students who cannot afford to pay tuition fees, about fifty medical schools have provided, in the aggregate, about 550 scholarships, and thirty or more have set aside generous loan funds. Nevertheless, with the increasing charges for tuition, a larger provision of such aids is needed. They are especially important at this time, since the severity of the modern medical curriculum makes it more difficult for a student to earn money during his medical course. Reports indicate that many students even now earn a major part of their expenses at the same time they carry their medical studies. It is a question, however, whether the money so earned is not at the expense of much valuable experience which the student otherwise might have obtained. It is during the student's medical course, while he is under able instructors, that he has the best opportunity of his lifetime to study and observe patients in both dispensary and hospital. In order to make the best use of this opportunity, it would be better to borrow money with which to meet his expenses, or to have the advantage of a free scholarship. For those who have money to give, therefore, it would be hard to find a more worthy object than in the endowment of more of these scholarships. In the granting of the scholarships, proper safeguards should be established so that the chief object for which they are established, the helping of those who are really worthy of financial aid, may not be defeated.—*Journal of the American Medical Association,* August 22, 1925.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LES CURIOSITÉS DE LA MÉDECINE. Par Docteur Cabanès. Paris: E. le François, 1925. Pp. 326.

OPOTHÉRAPIE CLINIQUE. Organothérapie. Formulaire. Par Marcel Laemmer. Paris: Masson et Cie, 1925. Pp. 147.

PRINCIPLES OF PUBLIC HEALTH ENGINEERING. By Earle B. Phelps, B.S. New York: The MacMillan Company, 1925. Pp. 265.

NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS. Tenth Annual Report. December 31, 1924. New York. Pp. 45.

AMERICANITIS. Blood Pressure and Nerves. By William S. Sadler, M.D., F.A.C.S. New York: The MacMillan Company, 1925. Pp. 176.

INTERNAL SECRETION AND THE DUCTLESS GLANDS. By Swale Vincent, M.D., M.R.C.S. Illustrated, Third Edition. New York: Physicians and Surgeons Book Company, 1925. Pp. 463.

MEDICAL AND SURGICAL REPORT OF THE ROOSEVELT HOSPITAL. Second Series, 1925, Based on the Work of the Years 1915-1924 Inclusive. New York: Paul B. Hoeber, Inc., 1925. Pp. 378.

BAKTERIOLYSE. Einsichten und Aussichten. (Mit Besonderer Berucksichtingung der D'Herelle-Und Much-Lyse). Modern Biologie, Heft 8. Von Dr. Artur Hain. Leipzig: Curt Kabitzsch. 1924. Pp. 83.

DIE PROSTITUTION. Handbuch der Gesamten Sexualwissenschaft in Einzeldarstellungen. Zweiter Band, Erste Halfte. Von Dr. med. Iwan Bloch und Dr. med. Georg Loewenstein. Berlin: Louis Marcus, 1925. Pp. 728.

WIE SOLLEN WIR UNS ZU DER HOMÖPATHIE STELLEN? Von Geheimrat Prof. Dr. August Bier, Berlin. Sonderabdruck aus der Munchener Medizinischen Wochenscrift. 1 Auflage. Munchen: J. F. Lehmann, 1925. Pp. 36.

VERORDNUNGSBUCH UND DIATETISCHER LEITFADEN FÜR ZUCKERKRANKE. Von. Prof. Dr. C. Von Noorden und Prof. Dr. S. Isaac. Zweite Verbesserte Auflage. Mit 172 Kochworschriften. Berlin: Julius Springer, 1925. Pp. 130.

MODERN SURGERY. General and Operative. By John Chalmers DaCosta, M.D., LL.D., F.A.C.S. Ninth Edition, Revised and Reset, with 1200 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1527.

THE MEDICAL SERVICES. Official History of the Canadian Forces in the Great War 1914-19. By Sir Andrew Macphail. Published by Authority of the Minister of National Defence, under direction of the General Staff. Ottawa, 1924. Pp. 428.

ERGEBNISSE DER MEDIZINISCHEN STRAHLENFORSCHUNG. (Rontgendiagnostik, Rontgen-Radium und Lichttherapie). Band I, mit 451 Abbildungen in Text und 3 photographischen Tafeln. Herausgegeben von H. Holfelder, et al. Leipzig: Georg Thieme, 1925. Pp. 748.

PNEUMONIA. Its Pathology, Diagnosis, Prognosis and Treatment. By the late R. Murray Leslie, M. A., B. Sc., M. D. Edited and Revised by J. Browning Alexander, M. D., M. R. C. P., (Lond.). London: William Heinemann (Medical Books) Limited, 1924. Pp. 351.

THE NEWER KNOWLEDGE OF NUTRITION. The Use of Foods for the Preservation of Vitality and Health. By E. V. McCollum, Ph.D., Sc.D. and Nina Simmonds, Sc.D. Illustrated. Third Edition, Entirely Rewritten. New York: The MacMillan Company, 1925. Pp. 675.

LA MORTALITA DELIA PRIMA INFANZIA NELLE SUR RELAZIONI CON LE INFEZIONI PRETUBERCOLARI E LA TUBERCULOSI. Soluzione Practica e Definitiva di Questi Gravissimi Problemi. Supplements de La Niplolegia, Anno X, 1924. Por. Dr. J. Ferran. Barcellona; Pp. 47.

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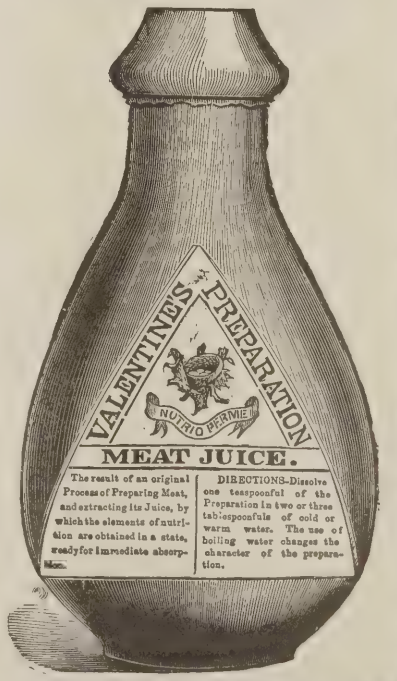
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Miscellany.

Occupational Diseases of Seamen.—Dr. H. Ruge, Surgeon Lieut.-Commander in the German Navy, in some interesting articles published in the *Marine Rundschau,* observes that when diseases of seamen came prominently into notice in the age of the great voyages of discovery the first and worst was scurvy. Next in importance were the infective diseases: Typhus (ship fever), typhoid, dysentery, and in the tropics yellow fever and malaria. The number of sick was almost incredible in these early expeditions. In 1757 a French expedition, as it sailed, sent four hundred typhus cases ashore at Brest from two of its ships. A thousand were landed at Louisburg on arrival, survivors were reembarked in autumn, and when the ships reached Brest there were four thousand sick in the fleet, while hundreds had died during the passage. Hosier in 1726, off Colon, lost his personnel twice over from yellow fever.

Little was known definitely about prevention, but Cook (1772-5) and La Perouse (1875-8) had hardly a man sick in their voyages. The food was unbelievably bad; the water was no better. It was not till 1815 that iron tanks began to replace the old decaying wooden casks. To make the dirty, stinking water tolerable it was mixed with rum, of which each man was given five ounces daily. Thereon alcoholism began to rage. Rouppe (1764) calls delirium tremens the characteristic disease of seamen, but improvement set in in the latter half of the century, and the disease is now rare.

Dr. Ruge classifies the sickness of the modern German Navy in four main groups: Chills, mechanical injuries, inflammations of connective tissue, and venereal disease. Under "chills" are included tonsillitis, sore throat, bronchial catarrh, pleurisy, acute catarrhal, gastric and intestinal attacks, and rheumatism of muscles or joints. Chills are more common afloat than ashore (as seventy-five to sixty-five), more frequent in iron than in wooden ships (as three to two in 1893-7), and it is the engine room, or rather the stokehold, staff that suffer most, and he comments that these men should always wear jerseys when on deck in cold weather; steam heating of the ship also lessens risk. Mechanical injuries cause much loss of time. They are more frequent and more dangerous in sailing ships.

The mortality of accidents in sailing ships is thirty per cent.; in steamships it is only five per cent. But most accidents nowadays occur about the guns, and sailors are the victims; there are few accidents in the engine room. Recruits and men new to the ship suffer most, and accidents are more frequent on Mondays, lessening as the week goes on. This is due to unwisely spent leave at weekends, when, too, venereal disease is most often acquired. Eighty-five per cent. of accidents occur on duty. Many might be prevented by improved construction of ships, but accidents there will always be where people are working hard. Men in ships are fortunate in having a doctor at hand when they are injured, so that wounds need not become septic. Boils cause much loss of service; they are generally on the arms, and attack sailors more than stokers. They are at their maximum in summer but have a second maximum in autumn, when the recruits join. The recruits are very susceptible, probably because they are constipated. Cleanliness is the best protection against boils, and once they have a hold on the ship, the ship should be disinfected. Three quarters of the venereal infections are contracted by men under the influence of alcohol. At Hamburg, Noche found seven thousand cases of venereal disease in three years aboard ships entering the port. The East Asiatic Squadron has had one third of its force at one time under treatment.

Sailors suffer much from syphilis, and the worst infected women are at the ports. Unlike alcoholism, venereal disease has decreased little since the war. The men in the German Navy are warned, preventives are always available for them; the merchant seaman is less protected. Dr. Ruge's article deals interestingly with a subject too little discussed. —*Lancet,* September 5, 1925.

Vermouth.—Vermouth wine has recently become a common article of commerce in this country, although it has been popular for many years on the Continent as a stimulant and an aperative, says the *British Medical Journal,* August 29, 1925. Its use appears to be extending, and it is taken now not only with soda as a mild alcoholic beverage, but forms the basis of most cocktails. Recipes for its preparation are numerous, but the following will serve as a sample: "Wormwood, 4 oz.; tansy, 4 oz.; gentian, 2 oz.; angelica root, 2 oz.; blessed thistle, 4 oz.; calamus aromaticus, 4 oz.; elecampane root, 4 oz.; centaury leaves, 4 oz.; germander leaves, 4 oz.; nutmegs, 15; oranges sliced, 6; alcohol of 85°, 9 pints; sweet white wine, 20 gals.; macerate fifteen days and filter." It will be seen from this that several of the plants contain principles which excite the cerebral cortex; especially is this the case with wormwood and tansy, which contain a principle, thujone, which is isomeric with camphor and which causes epileptiform convulsions in sufficiently large doses just as camphor does.

It is for this reason that France has forbidden the drink absinthe, which is made largely from wormwood and contains a varying amount of thujone. Overindulgence in absinthe induces sleeplessness, a general condition of unrest, and sometimes vomiting. Later vertigo and tremors, especially of the head and tongue, are a marked feature, culminating in epileptiform convulsions in which consciousness is usually lost and clonic convulsions occur. The fits recur at short intervals. Recovery is complete if the habit is broken in the early stages. Besides wormwood and tansy, several other essential oils excite the cerebrum, especially nutmeg, and from time to time cases of convulsions following the eating of nutmegs have been recorded.

Vermouth is thus a mild alcoholic beverage, containing about three quarters as much alcohol as is present in sherry, but its action is fortified by thujone and other principles from essential oils, and it is no doubt these substances which induce the exhilarating effects of the beverage. It should not, however, be placed in the same category as absinthe, although both contain the same principles; the relationship between these two drinks may be compared with that between a light wine and a spirit.

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DIABETES AND THE REMEDY

Under date of June 8th, 1925, Dr. J. McK. of New York City writes:

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Literature on request

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Kentucky Is Appointing Cooperative Clinicians.—The Kentucky State Board of Health is appointing cooperative clinicians throughout the State for venereal disease work. Members of the state and county medical societies who are listed by the County Health Officer as particularly interested in venereal diseases, are eligible for these appointments. The arrangement provides for the treatment of indigent patients and for the enlightenment of the community in the venereal disease problem. The patient helps to defray the cost of drugs and of other materials by contributing according to his ability, but not to exceed two dollars. If the patient is able to pay more than two dollars, he automatically becomes a private patient. The Kentucky State Board of Health pays half of the cost of the drugs used in the treatment of indigent patients, the clinician paying the other half out of the contributions made by the patients. The State Board of Health makes available to clinicians at cost, drugs and materials to be used exclusively in the treatment of indigent patients.

Each clinician is supplied with *Venereal Disease Information* and *Social Pathology*, two periodicals issued by the United States Public Health Service for use in its cooperative work with State departments of health. The Hot Springs Venereal Disease Clinic is also open to clinicians who may desire to become more fully acquainted with the various phases of venereal disease control. Strip film views of syphilis and of skin diseases simulating syphilis will also be available to the State Board of Health for use in interesting physicians and medical students in fortifying themselves in the detection and treatment of venereal disases and in actively cooperating with the health authorities. These films have been specially prepared by the United States Public Health Service from original photographs and negatives made available through the generosity and cooperative spirit of a number of syphilologists and dermatologists who agree with the health authorities that effective venereal disease control depends upon the active cooperation of the physicians and health departments. A representative of the United States Public Health Service is cooperating with the Kentucky State Board of Health in the furtherance of this venereal disease activity through public education regarding the nature of these diseases and the value of therapeutic and prophylactic measures.

The Prevalence of Cancer.—The collection of statistical information concerning the prevalence of cancer is one of the two principal objects of the American Society for the Control of Cancer as stated in its certificate of incorporation, and to this subject the society has given much attention ever since it was created a dozen years ago. In view of this fact and of the many uses to which statistical data as to the mortality from cancer may be put in the educational campaign which the society is leading, the following information is of much value.

In considering these figures it will be well to remember that they represent official death rates as compiled by the Bureau of the Census from copies of the original death certificates and supplied by the several states in which the deaths occurred, and estimates of population based on the preceding census, due allowance being taken into consideration for the increase since the last enumeration was made.

A death rate is really the number of recorded deaths which have occurred during the year compared with the population on a certain day of the year and is usually expressed as so many deaths in 100,000 of population if for a particular disease, or so many in 1,000 if all causes of death are included.

Cancer is nowhere a reportable disease in the United States and the prevalence of cancer can only be estimated from the death returns. This is hardly a satisfactory method of arriving at it, inasmuch as the duration of the disease varies considerably, being taken by some authorities to average two years and by others three years before death occurs. With an illness of such long duration it is obvious that many persons who have cancer, and would assuredly die of it in time, must die of other and more immediately fatal diseases, as pneumonia, for example, and so escape being recorded as dying of cancer. This tends to make the cancer death rate lower than it otherwise would be and causes the prevalence of cancer to appear less than it really is.

There is a factor which is more potent than all others put together in tending to make the prevalence of cancer seem less than it actually is, and this is the incompleteness of the original returns. More people die of cancer than are so recorded, the reasons for the omission from the records being many. Chief among them is the fact that many cases are not correctly diagnosed, even when they end fatally. In hospitals where autopsies are regularly performed this error has been found to be as high as thirty per cent. If the death rate is too low the prevalence which is based upon the rate must be too low also. All things considered, and in the absence of better figures, it appears not an exaggeration to assume that the number of cases of cancer which exist at any place at any time is about three times the number of deaths which occur there in the course of a year. This means that in that part of the United States which is situated on the North American continent fully 300,000 persons are suffering from cancer at the present time.

Cancer Clinics.—In the July *Bulletin* of the American Society for the Control of Cancer appears the following list of important permanent cancer clinics in the United States:

The Huntington Memorial Hospital, Boston, Massachusetts.

The New York State Institute for Malignant Disease, Buffalo, New York.

The Barnard Free Skin and Cancer Hospital, St. Louis, Missouri.

The Columbus Cancer Clinic, Columbus, Ohio.

The Blodgett Memorial Hospital, Grand Rapids, Michigan.

The Albert Steiner Ward for Cancer and Allied Diseases, Atlanta, Georgia.

The Todd Memorial Clinic and the Cancer Institute of the Hospital of the University of Minnesota, Minneapolis, Minnesota.

The Memorial Hospital, the New York Skin and Cancer Hospital, and the New York City Cancer Institute, all in New York City.

The American Oncologic Hospital and the Philadelphia General Hospital, Philadelphia, Pennsylvania.

The Pittsburgh Skin and Cancer Foundation, Pittsburgh, Pennsylvania.

The Rochester Clinic of the New York State Branch of the American Society for the Control of Cancer, Rochester, New York.

The cancer clinic of the Women's Welfare Association, Washington, D. C.

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2	18.0 mg.	22.0 mg.	4.0 mg.	22.0%
3	15.5 mg.	19.1 mg.	3.6 mg.	23.0%
4	17.5 mg.	20.9 mg.	3.4 mg.	19.0%

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LITERATURE SENT UPON REQUEST

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The Beauty of the Hair.—Taste in women and imagination in artists have cultivated by prodigious invention this domain which would seem to be so limited. I will not retrace the history of the coiffure, for I could only quote from books well known facts. Moreover, it is there in entirety, this history, in statues, paintings, engravings in our museums. When you see them, notice the innumerable variations in their coiffures. This entertaining study is the basis of modern styles, and perhaps you may discover some ancient arrangement that will suit you to perfection. Look for instance at the first bust at the left of the entrance to the Louvre. It is of Poppea, wife of Nero. Her hair is waved as though by Marcel. How many women and hairdressers have passed before it without even guessing at its remarkable revival in our day and the fortune awaiting him who revived it?

Fashion has lost its tyrannical character of other times, when it was necessary to follow the court. Today at a reception, at a "first night" at the opera, in the theatre, a mere glance reveals fluffy hair, hair braided and coiled, some coiffures simple, others ornamented with magnificent combs, many bobbed heads, curled or waved. There is not a style; there are ten, each justified by the wearers who know it is becoming to them and with no attempt to follow rivals. Freedom is absolute. If fashion is lost, the variety which reigns has also its charm; each woman strives for the arrangement which makes her most beautiful.

Before making a choice, consult the mirror and consider most carefully. The hair is really the frame to surround the beauty of the face. Its quantity, its style, its arrangement should be perfectly adapted to the countenance. There should be as many different arrangements as there are faces. A *coiffeur* is an architect whose duty it is to complete an edifice three fourths of which is already constructed."—Translated from *Æsculape,* and quoted from *La Beauté de la Chevelure,* by Dr. Paul Alexandre, Paris, 1924.

The Gauging of Character of Children.—School children, big and little, can be graded, and should be graded as far as possible, according to their moral worth. This is no easy undertaking. Indeed, it needs a special type of genius to divine character, and most of those who have the care of our youth, parents as well as school teachers, are sad blunderers in this respect.

It needs little skill to pick out the downright moral degenerate, the unmistakably callous and incorrigible pupil, but it may happen that those who gain the highest marks for good character are morally inferior to those who are accounted downright bad; the good boy who works hard and never breaks the rules of the school may be a mean, selfish prig, while the boy who neglects his work and who is always getting into scrapes may have a kind and generous nature, only needing the right kind of handling to bring it out.

While the undiscriminating teacher is in danger of misjudging this type of character, there is a class of moral degenerate which no sane person can well fail to discover. These may be grouped under two categories—those who are intellectually normal, or supernormal (the Mephistophelian type) and those who are intellectually defective.

Most of the elementary London Board Schools have an A side for the more intelligent children, and a B side for the duller ones who are given mainly hand work such as needlework and cooking. These are termed backward children, and are distinguished from those who are definitely deficient mentally. For these special schools are provided, just as they are provided for those who are crippled, deaf and dumb, and even for sufferers from lupus. The A side children are much more amenable morally than those of the B side. These are from the moral viewpoint definitely below the marriage standard; indeed, in an ideal state most if not all of them would be debarred from marriage. They are feebly endowed as regards moral responsibility and furnish the largest quota of unmarried mothers.—*Medical Press and Circular,* August 19, 1925.

Yale to Study Mechanics of Walking.—Facts and figures about leverage, stresses, and distribution of weight in the human foot are to be sought by means of specially designed instruments at Yale University. For several hundred thousand years men have been operating that remarkable mechanical device—the human foot—without knowing exactly how the thing worked or what to do when the mechanism failed. X rays and studies of anatomy have helped to reveal the complex structure of the walking apparatus, but experts still differ in their interpretation of how the bones and muscles and tendons are coordinated. Dr. Dudley J. Morton, instructor in surgery at Yale, who is in charge of the foot investigation, says that results of the army examinations during the recent war clearly show the practical value of the proposed research. The usual standard for determining the foot efficiency of the soldiers was the condition of the longitudinal arch. "This method," he says, "led to the rejection of many applicants and drafted men whose feet presented low arches but who had never experienced discomfort even under strenuous activity, because their body weight was properly distributed through their low arched feet. On the other hand, many thousands of accepted recruits who possessed well developed arches were soon assigned to 'development camps' because of foot trouble. These facts testify to the unreliability of the height of the arch as a standard for determining the potential strength and integrity of the feet. The proficiency of the foot depends essentially upon the ratio of weight distribution to the chief bearing points of the feet."—*Science Service.*

The Herpes of Marat.—Amédée Latour recounted once in his *Causeries* for *L'Union Médicale* his interview with Father Souberbielle who was the friend and the physician of Danton, Robespierre and Marat. We know through him that "the friend of the people," being herpethetic, was tormented with an incessant pruritus, which could be allayed only through continual baths. He hardly ever emerged from his bathtub, which was covered with a cloth; only head and arms were free; a board placed across served as a desk. It was in this bathtub that he corrected the proofs of *L'Ami du Peuple,* and that he was assassinated by Charlotte Corday.—Translated from *Æsculape.*

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Leonard Phillips—*Proceedings of the Royal Society of Medicine*, Sept., 1923.

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The Menace of Animal Diseases from Foreign Countries.—During the past year two significant examples have occurred of the danger and great economic loss which may result from the inroads of foreign pests and of the danger of widespread disaster to some of our great industries. These examples were the outbreak of foot and mouth disease among livestock in Texas and California, and the appearance of the European fowl pest in poultry flocks of this country last December. The method by which the foot and mouth disease outbreak gained entrance has never been determined, but the fowl pest was in all probability introduced through an investigator working on filterable viruses in a large institution in the summer of 1922, according to a recent report from the United States Department of Agriculture. The virus was obtained from the Pasteur Institute of France where the disease exists. The investigator who introduced the virus gave some of it to another investigator, and a second sample was distributed for laboratory investigations. An assistant took some home and inoculated chickens in order to maintain a supply of live virus for continuing investigational work in the fall. Some of the poultry was probably sold to dealers and the infection spread—and so the story goes.

The Department of Agriculture does not permit the importation of animals from countries having destructive animal diseases not present in the United States, for it believes that the security of some of our greatest industries depends upon the observance of all precautions, not only by those engaged in commerce, but by those engaged in scientific work. The report states that only recently there arrived from Africa a scientist who carried with him a sample of hog's blood which, had he lost it in any way, might have proved a greater menace to swine in the United States than hog cholera ever was. The sample of blood was at once burned. "The gentleman from East Africa had the best of intentions. He wished to have the scientists who had been so successful in combating hog cholera in this country work on an unknown disease which was causing great losses to swine breeders in his country. He described it as a disease which is much more contagious than hog cholera and kills the animals in a much shorter time and in much greater numbers. It would indeed have been an effective demonstration of international friendship if the department's scientists had been able to solve the problems of the farmers in East Africa. But the risk taken is much too great. The place to study this unknown enemy is East Africa."

During the preparation of the report a Swiss arrived at the Bureau of Animal Industry carrying a bottle of attenuated virus of foot and mouth disease. He had brought it from his country in order to try it out in this country as a means of fortifying flocks and herds against the diseases by giving them mild cases. He, of course, had to leave the sample at the bureau and it was destroyed.

Other examples could be cited in which dangerous possibilities were involved. The recent Second Deficiency act passed by Congress provides money for carrying on work with the foot and mouth and other disease by our scientists in the countries where they exist regularly, and this must necessarily result in greater safety for ourselves and for our livestock.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LECTURES ON DYSPEPSIA. By Robert Hutchison, M.D., F.R.C.P. London: Edwin Arnold & Company: New York: Longmans, Green and Company, 1925. Pp. 176.

A TEXTBOOK OF THE SURGICAL DYSPEPSIAS. By A. J. Walton, M.B., B.Sc., F.R.C.S. Illustrated. London: Edward Arnold & Co.; New York: Longmans, Green and Company, 1923. Pp. 728.

RADIUM. Its Therapeutic Use in General Practice. By G. H. Varley, M.D. (Oxon.) Oxford Medical Publications. London and New York: Oxford University Press, 1925. Pp. 103.

PARASITOLOGY FOR MEDICAL STUDENTS. By Alex Mills Kennedy, M.D. (Glas.) Oxford Medical Publications. Illustrated. London and New York: Oxford University Press, 1925. Pp. 142.

CLINICAL RESEARCHES IN ACUTE ABDOMINAL DISEASE. By Zachary Cope, M.D., F.R.C.S., Oxford Medical Publications. Illustrated. London and New York: Oxford University Press, 1925. Pp. 148.

MIDWIFERY MECHANICS. Illustrated. Oxford Medical Publications. By Lieut.-Colonel Andrew Buchanan, I.M.S. (Retd.), M.D., M.Ch., M.A.O. London and New York: Oxford University Press, 1924. Pp. 82.

PHYSIOLOGICAL AND CLINICAL CHEMISTRY. By William A. Pearson, Ph.C., Ph.D., M.D. and Joseph S. Hepburn, A.M., M.S., Ph.D. Illustrated. Philadelphia and New York: Lea & Febiger, 1925. Pp. 306.

REPORTS OF THE ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH. Volume II. By Sir James MacKenzie, et al. Oxford Medical Publications. Illustrated. London and New York: Oxford University Press, 1924. Pp. 190.

THE CHEMICAL AND PHYSIOLOGICAL PROPERTIES OF THE INTERNAL SECRETIONS. By E. C. Dodds, Ph.D., M.B., and F. Dickens, M.A., Ph.D. Oxford Medical Publications. London and New York: Oxford University Press, 1925. Pp. 214.

EXPERIMENTELLE PHYSIOLOGIE UND PATHOLOGIE DER VERDAUUNG. (Chymologie). In dreissig Vorlesungen von Prof. Dr. E. S. London. Mit 16 Abbildungen in Text. Berlin und Wien: Urban & Schwarzenberg, 1925. Pp. 197.

ARTIFICIAL SUNLIGHT AND ITS THERAPEUTIC USES. By Francis Howard Humphris, M.D., F.R.C.P. (Edin.), M.R.C.S. (Eng.). Oxford Medical Publications. Second Edition. Illustrated. London and Oxford: Oxford University Press, 1925. Pp. 203.

THE ICONOGRAPHY OF ANDREAS VESALIUS. (André Vésale.) Paintings, Pictures, Engravings, Illustrations, Sculpture, Mealds, with Notes,—Critical, Literary, and Bibliographical. By M. H. Spielmann, F.S.A. London: John Bale, Sons & Danielsson, Ltd., 1925. Pp. 223.

DIE KLINIK DER BÖSARTIGEN GESCHWÜLSTE. Von Geh. Rat. Prof. Dr. P. Zweifel und Geh. Med.-Rat. Prof. Dr. E. Payr. In drei Bänden, Band II. Brust-und Bauchorgane, Harn und männlicher Geschlechtsapparat, Wirbelsäule und Extremitäten. Mit 267 Textabbildungen and 48 fargigen Tafeln. Leipzig: S. Hirzel, 1925. Pp. 740.

HANDBUCH DER BIELOGISCHEN ARBEITSMETHODEN. Von Dr. Emil Abderhalden. Abt IV. Angewandte chemische und physikalische Methoden, Teil 6, Heft 2. Lieferung 162. Methoden zum Studium der Funktionen des Magendarmkanale, von Friedrich Uhlmann-Basel. Berlin und Wien: Urban & Schwarzenberg, 1925. Pp. 464-620.

HANDBUCH DER BIOLOGISCHEN ARBEITSMETHODEN. Von Dr. Emil Abderhalden. Abt. VIII, Methoden der experimentellen morphologischen Forschung, Teil 1, Heft 4. Lieferung 171. Experimentelle morphologische Untersuchungen, von Ernst Leupold-Wurzburg. Berlin und Wien. Urban & Schwarzenberg, 1925. Pp. 791-940.

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In **Typhoid, Gastric** and **Other Fevers,** where it is **Essential** to **Sustain** the **Patient** without **Irritating** the **Weakened Digestive Organs, Valentine's Meat-Juice** demonstrates its **Ease** of **Assimilation** and **Power** of **Restoring** and **Strengthening** when **Other Food Fails.**

J. R. Wood, M. D., *Physician Sheltering Arms Hospital, Paint Creek, W. Va., U. S. A.:* "I have been using VALENTINE'S MEAT-JUICE in the treatment of Typhoid Fever cases in the Sheltering Arms Hospital, for the last two or three weeks, with the most gratifying results both to the patient and physician. I consider it the best preparation of animal food I have ever seen, in fact, the only one I have ever had any success with."

Dr. Genevaix, *Assistant Surgeon-Major, First Class, Hotel Dieu, Creusot, France:* "The patients to whom I have given the excellent preparation, VALENTINE'S MEAT-JUICE, have found their general condition rapidly improved by it, and in the convalescence from continued Fever (Typhoid and Para-Typhoid) it gives the best results."

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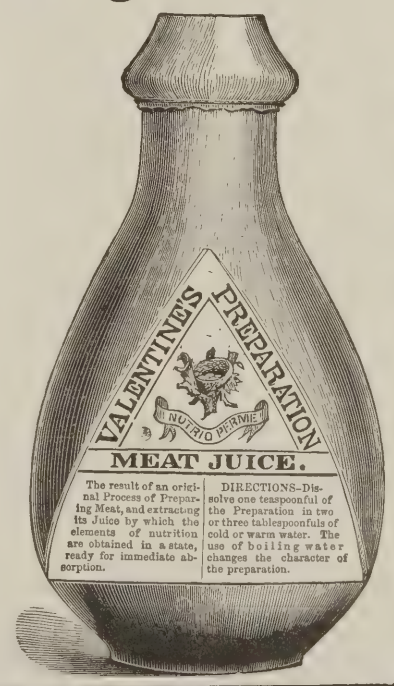
VALENTINE'S
PREPARATION
NUTRIO PERAMIE
MEAT JUICE.
The result of an original Process of Preparing Meat, and extracting its Juice by which the elements of nutrition are obtained in a state, ready for immediate absorption.
DIRECTIONS–Dissolve one teaspoonful of the Preparation in two or three tablespoonfuls of cold or warm water. The use of boiling water changes the character of the preparation.

Miscellany.

The Duty of the Family Physician.—Dr. D. E. Sullivan, secretary of the New Hampshire Medical Society and a member of the Gorgas Memorial Institute, Chicago, writes as follows concerning the importance of periodical physical examinations.

"For many years there has been a well organized system in the United States to protect public health —that is, the health and lives of citizens as a mass formation. Thereby have been accomplished definite results in some instances, notably the practical elimination of typhoid fever as a menace and the protection of school children through medical supervision and the application of preventive measures. In the meantime, however, the individual has received scant attention and only during a more recent period have his particular requirements claimed the attention of the medical profession. While the need of regular periodical physical examinations is recognized and advocated by all progressive physicians and has been officially urged by the American Medical Association through the House of Delegates, it does not require very close observation to note the indifference of our fellow practitioners to the call.

"State and county societies have evidenced cooperation with the central organization by the adoption of resolutions, naming special committees to carry on the work and devoting space on their programs to its consideration but what, so far, has been the response of the vast majority of the members? Very few of them have heartily recommended it to their families or given the subject anything more than a passing consideration.

"The opportunity is ripe to confine such an important matter to the ranks of family physicians and wrest it from exploitation by commercial institutes. But this will not be accomplished, unless we display more personal, active interest in getting the message to the people. We need to be cooperative, 'to push' the splendid educational work of the Gorgas Memorial Institute, now under way in the newspapers of our country.

"While the more urgent application of the necessity of this work may be of greater vital interest to men and women of midlife, no age or class is exempt. A careful scrutiny of a babe may disclose conditions or apparent tendencies of disease which, recognized in season, will result in a sound mind in a sound body instead of a crippled limb or arrested mental development. The growing child will record defects of eyesight or hearing unrecognized by the parents and by properly applied remedies saved from a life of dependency, and so on through the several decades until its greatest worth is found after middle life. It is our duty to be the leaders in this movement, to enter upon it with well equipped and united ranks, to give proper publicity of its necessity to the people and devote full and sufficient time to every examination.

"Too long has the mind of the medical man been focused on disease principally. Let him now devote special attention to the presumably well. The average person cannot be expected to recognize the indications of developing harmful symptoms of disease. Let our profession resolve to contribute to human progress the best of its resources."

The Country Doctor.—In the opening chapter of his interesting Reminiscences published in the *New York Times,* the late Thomas R. Marshall, Vice-President of the United States, pays a glowing tribute to the country doctor as represented in the person of his father. Mr. Marshall writes:

"I doubt if it be possible for the pen of man really to embalm in words the trials and incidents of such a life. Indeed, it would be almost a useless task to undertake the writing of it, for it is not worth while for one to read that which he cannot visualize with some of his own personal eyesight. . . . And yet I think, if service is to be the true mark of greatness in a people, all these other wonders of a wondrous age and State must pale into insignificance beside the service and sacrifice of the country doctor.

"Each age for itself, and each man for his age. I would not go back to the old times. I recognize the accuracy of the scientific investigation of the present time; I am asking for no more country doctors; but I have taken off my hat in grateful love and veneration for that innumerable company which helped to bring Indiana out of its primeval into its cultural state.

"And yet there is just one regret. It is the regret that with the country doctor has also disappeared the old family physician—the man who knew your peculiarities, your idiosyncrasies and your life. He was as much bound up in your destiny as your minister or your lawyer. He was adviser, counselor, friend. If I could rehabilitate him, put him in every community in America, get him to be my friend, I could be elected to any office within the gift of the people. It is nothing against science; nothing against these specialists; nothing against their accuracy, and it is not regret over the fees that we pay, but I do sometimes long to have an old family doctor that could really find out what is the matter with me without passing me down the line of from fifteen to twenty experts that know about an inch of the human anatomy, and know no more."

Industrial Accidents and Compensation Costs.—In a statistical review of industrial conditions in Pennsylvania by the Department of Labor and Industry, it is stated that more industrial accidents were reported to the Bureau of Workmen's Compensation during the month of June, 1925, than in any previous month of this year. There were 199 fatal industrial accidents reported during June, which record is second only to that of January, when 202 were reported. A classification of the fatalities shows 76 to have been reported by the coal mining industry, 29 by transportation and public utilities and 94 by all other industries.

Of the 1,087 fatal accidents reported for the first six months of 1925, the anthracite coal industry was responsible for 296, transportation and public utilities 169, the bituminous coal industry 167, the metal industries 159 and building and contracting 112. Fatal injuries to State and municipal employees numbered 40 for the six months' period.

There was an increase in practically all of the permanent disability cases during the month of June, especially in the miscellaneous cases and eye losses. The total amount of compensation awarded for this type of injury for the first six months of 1925 is more than $1,451,000.

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

Reprints of clinical experiments with sweetened condensed milk will be sent upon request.

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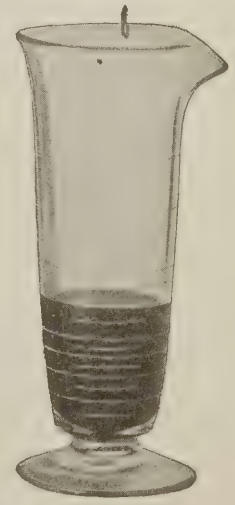

are established by the testimony of medical practice throughout the world for three generations. It has wide scope as a flavoring agent in prescriptions, and also as a tonic and direct stimulant of appetite and metabolism. For a complimentary sample and particulars write to

J. W. Wuppermann, Suite 1, 14 East 46th St., New York, N. Y.

Education in Safety Methods.—"The man who holds the most important safety job in America, and probably in the world from the viewpoint of the number of employees affected and the money invested, has said that he would rather accept responsibility for accident prevention in a plant that did not have a single mechanical safety device, but where there was the spirit of safety among the workmen and managers, than in a plant where there was every known physical safeguard, but not this spirit of safety."

This is quoted from an article by Arthur Williams, general commercial manager of the New York Edison Company and president of the American Museum of Safety, on Effective Accident Prevention by Educational Methods in the *Nation's Health*. He calls this statement the best commentary on the extent to which education may be relied upon and is demanded for the prevention of industrial as well as of civic accidents. Another indication of the value of education is shown in the present exhibits of the American Museum of Safety, which emphasize educational means for the prevention of accidents in contrast to the machine guards, various safety devices and safety materials of which the exhibits were formerly largely made up. Now photographs, stereopticon slides and other graphic exhibits show the schools for foremen, safety meetings of the workmen, bulletin board posters, safety publications, and other matters.

Professional safety engineers who have watched the development of the accident prevention movement from its infancy say, the writer states, that even today, with the hundreds of ingenious safety devices available, with automatic machines that are almost "fool proof," and with safety incorporated in the design, construction, and installation of industrial equipment, it is possible to prevent only from twenty-five to fifty per cent. of industrial accidents through mechanical means. Prevention of the rest depends upon education in safety, better supervision, and improved morale of employees. This estimate is borne out in an analysis made of some three hundred thousand accidents that occurred over a period of many years in the United States Steel Corporation plants.

The analysis shows that hand labor was responsible for more than forty per cent. of the accidents. The company's safety manager stated that the majority of these accidents could not possibly have been prevented by the use of mechanical safety devices or appliances, but were due to carelessness and the failure of workmen to observe the simple precautions conducive to safety. We know today that carelessness is as much a frame of mind as it is a bodily habit, and we are working on discovering the causes of this frame of mind, and how to change it. Often it is due to lack of confidence in the sincerity of the employer, or failure to understand his motives.

Safety education in the major sense probably means, the writer believes, that development of oneself "so that he is constantly, automatically, subconsciously on guard against accident. Many years of personal safety in the character of the work done in a shop, or the traffic upon the highways, have subordinated or practically eliminated the elemental sense of caution in every human being. In the early days of the republic, everyone was in danger from Indians and wild animals, and therefore everyone was always on guard, and any unusual or unexpected sound, like a rustling twig or crackling stick, brought one to immediate attention, looking for possible danger. Today every industrial activity is accomplished through the aid of high speed and dangerous machinery; a very large percentage of our population lives at great relative heights from the ground; highways, even in the quiet secluded country, are occupied by heavy, high speed traffic, that makes them more dangerous than the usual right of way occupied by a railway. The dangers of the early days of the republic are multiplied a thousand fold on every hand, and we must train ourselves to be constantly on the watch wherever we are—in a power plant, factory, on the highways, or traveling by boat or train."

The article is concluded by a paragraph on the new profession of "safety man," to which there are probably five thousand giving their entire time and work to it as a life profession. "These men should be considered in the highest degree as elements of economy and efficiency in our industrial and commercial life, for in every instance organized safety effort, both in plant equipment and education, pays and pays handsomely."

Infrequency of Cancer Among Primitive Peoples.—Frederick L. Hoffman, LL.D., consulting statistician to the Prudential Insurance Company of America, finds that primitive races are practically free from cancer, appendicitis, diabetes and other diseases suggestive of metabolic disturbances, and he says that it is not easy to exaggerate "the positive evidence of the rarity of cancer occurrence among uncivilized or primitive races."

"Why, for example, should cancer of the breast be practically absent among the women of the Indians of North and South America?" he asks. "Why should this fatal and increasing affliction be ten times more common among the women of Great Britain than among the women of Japan? Until the subject of the rare occurrence of cancer among primitive peoples is thoroughly investigated and understood, little progress towards an improvement in the cancer situation is likely to be made.

"In other words, there is apparently the most urgent need of diverting some of the efforts and means expended upon laboratory research and inquiry towards the infrequency or nonoccurrence of malignant tumors of all kinds among primitive races, and no fields, in this respect, would seem to be of greater promise than a study made among the Indians in North and South America and among the black and mixed blood population of Bermuda, Jamaica and the various other races of Central America and the West Indies. My own investigations among the Indians in North and South America are decidedly suggestive of the conclusion that the essential difference between these races and those who are civilized lies in the matter of diet and the resulting nutritional conditions, favorable or otherwise, as the case may be. If the increasing frequency of cancer is even in part attributable to the dietary habits common to civilized races, it is obviously a matter of first importance that this aspect of the subject should receive more extended and dispassionate consideration."

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Neuronidia

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Allaying Restlessness and Producing Refreshing Sleep

Especially indicated in insomnia from mental strain, neurasthenia and other neuroses; also an excellent sedative in sea-sickness.

Literature on Request

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Automobile Fatalities.—The Department of Commerce announces that reports of automobile fatalities in 1925 have been received from seventy-seven cities of 100,000 population or more. Thirty-nine of these cities show more automobile fatalities in the four week period ending September 12th than in the previous four week period. Norfolk shows no fatalities for the last eight weeks, and in addition the following seven cities show no fatalities for the last four weeks: Albany, Cambridge, Dallas, El Paso, Fall River, Fort Worth and Somerville. Somerville with four deaths holds the record for 1925.

For fifty-seven cities with an aggregate population of twenty-seven million, there were 3,313 automobile fatalities reported in the period January 1st to September 12, 1925, as contrasted with 3,319 such fatalities in the period January 1st to September 30, 1923. Of these 3,313 deaths, 433 were reported in the four week period ending September 12, 1925.

Of the sixty-five cities for which comparisons are possible so far for 1923 and 1925, thirty-five show more automobile fatalities reported in the period January 1st to September 12, 1925, than occurred in the first nine months of 1923.

So far this year New York city has reported 638 automobile fatalities, Chicago 410, Philadelphia 191, Detroit 183, Cleveland and Los Angeles each 154, while for the last four week period the figures are New York city seventy-nine, Chicago sixty-six, Philadelphia eighteen, Detroit twenty-five, Cleveland nineteen, and Los Angeles fifteen.

Research in Mental Hygiene.—A special Subcommittee on Research consisting of Dr. L. Pierce Clark, chairman; Dr. Frankwood E. Williams, Dr. Sanger Brown, Dr. Charles L. Dana, Dr. George H. Kirby, Dr. Thomas W. Salmon, Dr. C. Floyd Haviland, and Mr. Homer Folks, after a careful study of this subject, reported on its conclusions at a special meeting of the committee on May 19th. After full consideration of this report, the following recommendations were adopted by the committee as a program of action in this field:

1. That a suggestion be made to the chairman of the State Hospital Commission, the State Commission for Mental Defectives, and the Director of the Psychiatric Institute, that they appoint an Advisory Committee on Scientific Research in the State Institutions. The opinion was expressed that such a committee containing representatives of various departments of medicine, and the allied fields of biology and anthropology, would aid in further developing the scientific work of the institutions.

2. That consideration be given to amending the Medical Practice Act to make it possible for the State institutions to employ scientific workers from foreign clinics, laboratories, and teaching centres.

3. That the Psychiatric Institute consider placing its teaching functions on a continuing basis, in order to promote the further development of the teaching as well as the research functions of the institute.

4. That the chairman of the State Hospital Commission and the State Commission for Mental Defectives address a letter to the Rockefeller Institute asking the institute's aid in chemical and bacteriological study and research on various aspects of the problem of mental disorders and mental defects, and suggesting definite problems for research and inquiry.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

DE LA VIE ET DE LA MALADIE. August Lumière. Theorie colloidale. Lyon: Leon Sezanne, 1925. Pp. 47.

CAUSERIES D'OPHTALMOLOGIE. Documents pour les Praticiens. Par A. Cantonnet. Paris: A. Maloine, 1925. Pp. 325.

GUIDE-FORMULAIRE DES SPÉCIALITÉS PHARMACEUTIQUES. Par Dr. H. Legrand. Paris: J. B. Bailliere et Fils, 1925.

MALE INFIBULATION. By Eric John Dingwall, M.A. London: John Bale, Sons & Danielsson, Ltd. 1925. Pp. 145.

SYNOPSIS OF SURGERY. Illustrated. By Ernest W. Hey Groves, M.D., F.R.C.S. New York: William Wood and Company, 1925. Pp. 671.

CHEMISTRY OF THE BLOOD IN CLINICAL MEDICINE. By O. L. V. deVesselow, M.B., F.R.C.P. New York: William Wood and Company, 1925. Pp. 255.

THE MECHANISM AND GRAPHIC REGISTRATION OF THE HEART BEAT. By Thomas Lewis, M.D., F.R.S., F.R.C.P. Third Edition. London: Shaw & Sons, Ltd., 1925. Pp. 529.

MANUAL OF GYNECOLOGY. John C. Hirst, M.D. Second Edition, Revised, with 195 Illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 508.

LA RÉGÉNÉRATION DE L'ORGANISME HUMAIN. Rajeunissement. Stabilization. Nouveau Procédé d'Homohémothérapic. Par Dr. Helan Jawrowski. Paris: A. Maloine, 1925. Pp. 157.

PREVENTIVE MEDICINE. By Mark F. Boyd, M.D., C.P.H. Second Edition, Revised. With 135 illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 429.

PHYSICAL CHEMISTRY IN BIOLOGY AND MEDICINE. By J. F. McClendon, Ph.D. and Grace Medes, Ph.D. Illustrated. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 425.

DIE GASANALYTISCHE METHODIK DES DYNAMISCHEN STOFFWECHSELS. Von Priv.-Doz. Dr. Wilhelm Klein und Marie Steuber. Mit 20 Abbildungen. Leipzig: Georg Thieme, 1925, Pp. 99.

PEDIATRIC NURSING. A Text Book for Nurses. By Abraham Levinson, M.D. With 27 Engravings and 1 Colored Plate. Philadelphia and New York: Lea and Febiger, 1925. Pp. 250.

A TEXT BOOK OF GENERAL BACTERIOLOGY. By Edwin O. Jordan, Ph.D. Fully illustrated. Eighth Edition, Thoroughly Revised. Philadelphia and London, W. B. Saunders Company, 1925. Pp. 752.

SYNOPSIS OF MIDWIFERY AND GYNECOLOGY. By Aleck W. Bourne, M.B., F.R.C.S. Third Edition, Revised and Enlarged; with Numerous Diagrams. New York: William Wood and Company, 1925. Pp. 434.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY (DORLAND). New (13th) Edition, Revised and Enlarged. Edited by W. A. Newman Dorland, M.D. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1344.

THE OPHTHALMIC YEAR BOOK. Volume XXI. Containing Bibliographies, Digests and Indexes of the Literature of Ophthalmology for the year 1924. Edited by William H. Crisp. Ten Illustrations in the Text. Chicago: Ophthalmic Publishing Company, 1925. Pp. 323.

THE PSYCHOLOGY OF TIME. By Mary Sturt, M.A. International Library of Psychology, Philosophy and Scientific Method. New York: Harcourt, Brace & Company, Inc.; London, Kegan, Paul, Trench, Trubner & Co., Ltd., 1925. Pp. 150.

THE FAITH, THE FALSITY AND THE FAILURE OF CHRISTIAN SCIENCE. By Woodbridge Riley, Ph.D., Frederick W. Peabody, LL.B., and Charles E. Humiston, M.D., Sc.D. New York and Chicago: Fleming H. Revell Company, 1925. Pp. 408.

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you will readily understand why so many physicians in choosing a reconstructive tonic invariably order or prescribe

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(*Formula Dr. John P. Gray*)

Its results will not be uncertain nor delayed, and like so many other practitioners, you will be impressed with their prompt, positive and permanent character. Best of all, your patients will be as quick to note its effects and appreciate the substantial nature of the benefits they will uniformly obtain.

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Miscellany.

Coffee Drinking by Children.—Coffee drinking by children has long been regarded with disapproval by pediatrists. There are a number of objections to the practice, among which its harm to the nervous system is important. It is entirely conceivable that the use of caffeine containing beverages by the child will lead to the production of serious nervous defects later in life.

In their recent book, *Safeguarding Children's Nerves* (1924), Walsh and Foote clearly indicate that there is an increasing nervous instability of American people as demonstrated by the failure of many of our troops to withstand the stress and strain of active service. These writers believe that the numerous cases of shell shock which were suffered by many American soldiers in the World War were nothing more than cases of hysteria. It is possible that the early use of coffee has had a contributing part in causing the lack of nervous balance that is exhibited by so many adults in this country.

The drinking of coffee in the United States is steadily increasing, and the average annual consumption now amounts to thirteen pounds or more per capita. No small portion of this coffee is used by children, as shown by a study of the diet of a large number of children of preschool age at Gary, Indiana. This survey was made by the Children's Bureau of the United States Department of Labor. The report mentions that "two thirds of the entire group were found to drink coffee habitually, and forty per cent. to have it more than once a day. Not only so, but in certain of the groups of foreignborn parentage, coffee was drunk by more than ninety per cent. of the children, and three fourths of the Polish group had it two or more times a day."

In 1912, C. K. Taylor, a psychologist, made a study of coffee drinking by school children. He found that out of a group of 464 children, over seventy per cent. of them were coffee drinkers. Moreover, and more important still, he discovered that those children who drank the most coffee received the lowest grades. There is no doubt that coffee drinking is generally deleterious to the nervous system of the child, but the greatest harm done to children by this drink is its replacing milk in the diet. The Gary report, referred to above, states that coffee drinking by children "appears to have been inversely proportional to the use of milk. Not only do the schedules show about the same percentage of children drinking coffee as those lacking milk, but a comparison of coffee drinking by milk groups shows the use of coffee to increase markedly as the amount of milk increases." Commenting upon the disastrous effect of replacing milk by coffee, the report states further: "To leave out milk and substitute coffee plays havoc with any diet, whatever may be its redeeming features."

It is a well known fact that children easily acquire a taste for coffee and are less willing to drink milk after being permitted to use coffee. Miss Lucy H. Gillett, superintendent of the Nutrition Bureau of the New York Association for Improving the Poor, says in this connection that "children should never be given tea or coffee, not even to flavor milk. They will more often like milk if they are not first taught the combination of milk and coffee."

There are two important reasons why coffee should not be given to children; first, it has the harmful effect of crowding milk out of the dietary of the child; second, it is an unneeded stimulant.

In view of the fact that a large number of American children, especially in the industrial classes, are coffee drinkers, the matter is worthy of serious consideration.

First Ascent of Mont Blanc Was Made by a Physician.—After outlining the many previous attempts to scale the inaccessible sides of what was then considered the highest of the Alps, but has now had to take second place, Dr. Louis Masson describes the first successful attempt, which was made by two men, one of them a physician, Dr. Michel Gabriel Paccard, of Chamonix, in company with Jacques Balmat, who was not even a guide but simply a hunter of crystals and of the chamois (*Aesculape,* August, 1925). The latter was twenty-five years old and of most unusual physical strength and energy. He had in his search for crystals many times essayed the ascent of Mont Blanc, but had failed from all sides but the north. On this side he finally succeeded in climbing as far as the great plateau, but had had to descend because of nightfall, but not until after he had made a careful study of the cliffs guarding the remainder of the way, which had never seemed so forbidding. He revealed his discoveries to no one but the physician of the countryside, Dr. Paccard. Paccard was the son of a notary of Chamonix. After studying at Turin and Paris, he had established a practice in the valley. He was then in the prime of life, and, like some of his compatriots, the idea of conquering Mont Blanc obsessed him. He had already made painstaking attempts, and the north side was the only way he, like Balmat, had not tried. Balmat understood the situation. His intention was not only to climb Mont Blanc, but to furnish proof that he had attained the summit. What better witness could he hope for than Dr. Paccard, a witness, who, he was sure, could be depended upon not to rob Balmat of his part of the glory and compensation. So he hastened to consult with him. Bad weather retarded their departure for three weeks. It was not until August 7th that they were able to leave the valley with a prospect of reaching the summit from the north side. Before leaving Balmat had asked a friend to keep watch for their appearance on the snows of the upper slopes. But the progress of the climbers was anxiously followed by the whole village. At four o'clock the next morning the two men reached the glacier. From below, the people followed them anxiously with their glasses, and saw them disappear on the Grand Plateau. The anxious vigil was prolonged throughout the whole day. Suddenly about six thirty in the evening they saw appear simultaneously on the snows of the summit two black dots lost in the immensity of space; it was Balmat and Paccard, who joyfully hailed the whole population of Chamonix. Mont Blanc was conquered. With emotion inexpressible these two men had heard for the first time a silence which, as Javelle says, "had been unbroken since the creation of the earth."

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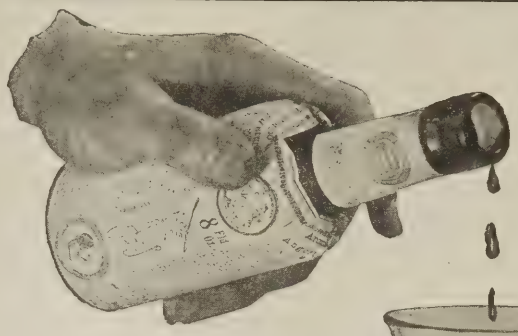

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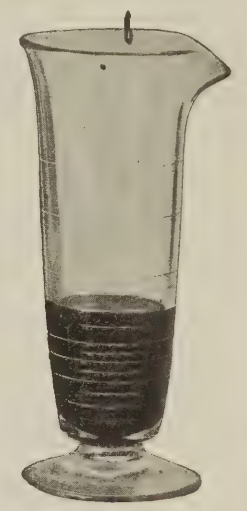

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J. W. Wuppermann, Suite 1, 14 East 46th St., New York, N. Y.

"Diabetes, Diabesan and a Grateful Patient"

Point Pleasant Beach, N. J.,
September 29, 1925.

Dr. Werner.
My dear Friend:—

I can call you friend as "Amicus certus in re incerta cernitur."

When I left the hospital last May after the "Allen Starvation Treatment" I weighed only 106 lbs., very weak and debilitated with glycosuria and glycemia, very much discouraged and melancholy. Dr. Shoub wrote me that he had seen very good results from the "Rational Treatment of Diabetes," by Dr. Werner, President of the Solosan Company of Morristown, N. J. With much misgiving I began your treatment about July last.

I want to congratulate you on my condition. I now weigh 122 lbs., very good color in my face, no sugar in the urine, very little blood sugar, no diacetic acid, no acetone.

I feel much stronger and do not tire easily, as before. I sleep better and not so nervous. I feel better and clinically proven to be better.

A grateful patient,
Rev. Joseph V. Sweeney.

Literature on request

Solosan Company, Incorporated

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Frequency of Typhoid Fever.—In a comprehensive article on Antityphoid Vaccination, published in the August and September issues of *The World's Health,* Dr. Aimé Gauthier says that until the last third of the nineteenth century typhoid fever was regarded as one of the gravest and most widely distributed diseases of man. Here and there, however, could be found places not invaded by the disease. Such places always possessed excellent drinking water. Little by little the work of the English physicians, Budd and Murchison, the German investigator Pettenkofer, and finally the absolute and precise demonstration of the contagiousness of the disease and its frequent derivation from water made their influence felt. In consequence, many governments and municipalities began the task of arresting typhoid. This task was accomplished by instituting, often at great expense, urban sanitary reforms.

As a rule typhoid fever has diminished or disappeared wherever sanitation of the water supply has been practised. Unfortunately, however, several localities, and even entire countries, do not utilize the advantages of public health measures or have not the necessary funds. In such places the task of controlling typhoid remains wholly unaccomplished and the fever still produces its destructive effects, which are grave in proportion to the degree in which local sanitation is neglected.

Communities exist whose sanitation must always be incomplete. Such is the case with military personnel during wartime, when residence in any place is uncertain. It is for this reason that typhoid, during the wars of the past, has been the constant companion of the soldier, and always one of the most frequent diseases in campaigns. In nearly every instance efforts undertaken with painful labor by the military medical authorities to purify drinking water and to disinfect and destroy human dejecta have encountered unsurmountable obstacles. Since the environment invariably became contaminated, no army prophylaxis founded solely upon sanitation was able to avert epidemics of typhoid fever.

The unfortunate conditions which formerly prevailed were quite reversed during the recent war in which the military medical services, while not neglecting sanitation, were able to utilize a new and very effective weapon—specific vaccination. These general statements must be supported by statistical arguments, which alone are really convincing.

In France, typhoid fever caused, from 1903 to 1920, 161,000 deaths, or about 9,000 deaths annually. The typhoid mortality has diminished materially in France, especially after the period included in the years 1886 and 1901. In 1911 the average mortality of typhoid fever in France was 0.19 per thousand inhabitants. The entire southern part of France—especially the regions bordering upon the Mediterranean—is much affected.

The typhoid situation outside France is here considered only in countries in which typhoid has become relatively rare, either because of climates which favor it little, or on account of special sanitary measures. Before the war the incidence of typhoid fever in Germany, England and especially the Scandinavian countries, was ten to fifteen times less than in France.

In Berlin the typhoid mortality for the period 1871-1885 was 1.0 per thousand inhabitants. For the period 1896-1900, the rate was 0.05 per thousand. Throughout Prussia the typhoid mortality for 1901 was 4,410. For 1909 it was 1,911, the disease being diminished by more than one half. For the whole of Germany the average typhoid mortality was 0.7 per 10,000 inhabitants, while the French rate was 4 per 10,000.

In Stockholm, whose population in 1923 was 424,000, only a few cases of typhoid fever occur every year (eight cases, for example, were observed in 1907) and the typhoid mortality is usually nil.

Radium Destroys Danger of Leprosy Infections.—The successful use of radium in the treatment of leprosy which, it is hoped, will result in the abolishment of the law of segregation that is imposed on those suffering from the dread disease, is reported by M. H. Neil and R. P. Sandidge of the Kalihi Leper Receiving Hospital at Honolulu. So far as can be discovered, this is the first use of radium in the treatment of leprosy, they state.

Following a series of experiments, the surgeons announce that in all cases treated with radium, "the leprous nodules disappeared. It is hoped that, by the use of radium, many lepers may be converted from dangerous carriers, emitting millions of bacilli from their noses, to persons not dangerous to public health and thus no longer in need of segregation."

Experiments with the radium treatment of leprosy have extended over a period of six months, the study being concentrated on the use of the element with especial reference to treatment of leprous lesions of the nose.

Seven patients having nodules in the nose were treated by the insertion of a fifty milligram tube in either nostril, alternating at intervals of from two to three weeks, exposure to the treatment being from one and a half to two and a half hours.

In all cases the nodules disappeared, it is said. In three of the cases the bacteria disappeared from the area under treatment. Other similar cases, not receiving the radium treatment, showed no change in nasal condition.

"It is the intent to extend the scope of this work to determine the permanence of its effects and the effect of clearing up the nose on the patient's general condition," the investigators conclude.—*Science News Letter,* October 17, 1925.

South Carolina Has Effective System of Disease Reporting.—Dr. James A. Hayne, State Health Officer of South Carolina and collaborating epidemiologist of the United States Public Health Service, has instituted a new and decidedly more effective system of disease reporting by physicians. Each week a card is mailed to physicians for the report of the number of cases of diphtheria, gonorrhea, syphilis, malaria, smallpox, tuberculosis, and certain other diseases. The greater effectiveness of this system of reporting is shown by the fact that in the first month of its operation 734 cases of syphilis were reported as against an average of 245 cases for each of the preceding ten months, or three times as many cases as were reported formerly. There is a still higher rate of increase in the number of reported cases of gonorrhea. Over seven times as many cases of this disease were reported under the new system as were reported formerly.

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It has also been used experimentally in certain forms of deranged fat metabolism; in conjunction with insulin in coma of diabetic origin, as well as most convulsive states and in cases of diabetes showing acetonuria.

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1	19.5 mg.	22.4 mg.	2.9 mg.	14.9%
2	18.0 mg.	22.0 mg.	4.0 mg.	22.0%
3	15.5 mg.	19.1 mg.	3.6 mg.	23.0%
4	17.5 mg.	20.9 mg.	3.4 mg.	19.0%

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LITERATURE SENT UPON REQUEST

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Diseases Under Investigation at the Rockefeller Institute Hospital.—The following diseases are being studied at the Hospital of the Rockefeller Institute for Medical Research, and patients suffering from them will be admitted to the extent of the hospital facilities.

1. *Nephritis.* Patients suffering from acute nephritis, or from chronic nephritis of either the edematous or nonedematous type. Cases of nephritis in young persons are especially suitable.

2. *Chickenpox.* Children and adults will be admitted to the Isolation Ward after November 1st; those early in the disease are especially desirable.

3. *Acute pulmonary infections, including acute lobar pneumonia.* Persons suffering from atypical forms of acute infection of the respiratory tract as well as patients with acute lobar pneumonia will be admitted. Those with lobar pneumonia should be referred early in the disease in order to permit institution of serum and oxygen treatment as early as possible when they are indicated. A chamber is available in which patients suffering from severe cyanosis may be treated in an atmosphere rich in oxygen.

4. *Rheumatic fever.* Patients should be referred early in the course of the disease, preferably before receiving antirheumatic drugs. Those suffering from one or more of the following manifestations are desired: acute rheumatic polyarthritis; subcutaneous rheumatic nodules; chorea accompanied by polyarthritis or subcutaneous nodules; rheumatic carditis accompanied by polyarthritis or subcutaneous nodules.

5. *Cardiac disease.* In continuing the study of the treatment of chronic heart disease it is planned to admit patients, either young or old, in the more advanced stages of heart disease. While persons with completely irregular pulse and fibrillation of the auricles may still be admitted, those with markedly weakened, but regular hearts are also desired.

Revision of the United States Pharmacopeia.—Robert A. Hatcher, New York (*Journal A. M. A.,* August 1, 1925), reviews the development and scope of the *Pharmacopœia.* He says that the physician must know something of the *Pharmacopœia* in order to avail himself of the advantages that it offers him, but this fact is often ignored, and a great many physicians are lamentably ignorant concerning the work. It is the duty of all teachers who are concerned with therapeutic instruction to assist in familiarizing students with the *Pharmacopœia.* Stress should be placed on the use of official names of drugs and preparations, especially in prescription writing. The *Pharmacopœia* contains a wealth of information for the student of chemistry and medicine and for the prescription writer. This includes suitable abbreviations, solubilities in various vehicles, and doses. The physician will often find it convenient to know in what form suitable for dispensing a given drug is official. This information is given in every case in which a drug enters into an official preparation. The *United States Pharmacopœia* of 1890 contained 994 titles, but the forthcoming revision will have only about two thirds as many, exclusive of those which were admitted as pharmaceutic necessities. It is the purpose of the Committee of Revision to admit only those drugs which are worthy of careful study by the physician, and the *Pharmacopœia* will be increasingly important as a reference work in medical colleges and for the clinician. The *Pharmacopœia* provides rigid standards of purity of drugs for which chemical tests are available. These tests have been studied with extraordinary care, and they suffice to insure a high degree of purity, and no official chemical may be dispensed legally if it contains any harmful impurity. Absolute purity is seldom attainable in practice, and pharmacists and chemists have devoted an enormous amount of time and care to the methods of preparing official chemicals which are free from more than traces of impurities that would be harmful in large amounts. Traces of impurities in drugs are not injurious to the patient. The manufacturers of many proprietary preparations observe no limitations except those that they choose to impose, and these may be changed at will. One hundred and ninety-one articles that were official in the ninth revision of the *Pharmacopœia* have been dropped, and fifty have been added. The Latin titles of forty-five have been changed more or less. Among the more important articles that have been added are acetylsalicylic acid, arsphenamine, barbital, epinephrine, procaine hydrochloride, neoarsphenamine, quinidin sulphate, and mild and strong silver proteinates. The Committee of Revision was greatly concerned with the question whether whiskey and brandy should be admitted. After long discussion they were dropped from the ninth revision, and after an equally protracted consideration they were admitted to the tenth. Their admission was almost uniformly favored by those members of the subcommittee on scope who are in practice, and almost uniformly disapproved by the laboratory workers. There are comparatively few important changes in the strengths of official preparations which retain their former titles. Among the more important is that of the ointment of yellow mercuric oxide. It was formerly employed extensively for the destruction of pediculi, whereas it is now used mainly in ophthalmic practice. The ointment formerly contained ten per cent. of yellow mercuric oxide, but that of the forthcoming revision will contain only one per cent.

The Large Family Not Yet Extinct.—According to statistics compiled by the United States Bureau of the Census from the Birth Registration Area of the United States for 1923, the large family has not become entirely a thing of the past in this country. In that year Virginia, Pennsylvania and North Carolina each filed a certificate of a birth recorded as the twenty-sixth child of its mother, and Virginia and Maryland each filed one which was the twenty-fifth. In addition to these, in ten states certificates of a total of eighty-seven births were filed, in each instance the child being the twentieth or on up to the twenty-fourth child of its mother. Among these latter, New York filed three certificates of birth where the children were respectively the twentieth, the twenty-first and the twenty-third of the mother. Pennsylvania registered in 1923 the largest number of children born to these prolific mothers, twenty-seven women giving birth to children recorded as the twentieth up to the twenty-sixth to their credit.—*Health News,* September 28, 1925.

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

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These conditions are usually disturbances of internal secretions and require internal secretion therapy.

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Graves—*Gynecology*, 2nd Ed., 1921.

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Health Conditions in the United States.—Surgeon General Cumming of the United States Public Health Service, says that health conditions in the United States have been generally good so far this year. Preliminary figures indicate that the death rate of the United States for the first seven months of 1925 will be lower than the average for the last five years in spite of the fact that the rate for the month of June was considerably higher than the usual rate for that month, which was probably due in some measure to the "heat waves" which prevailed over a large part of the United States.

Reports from State and city health officers indicate that most of the more common communicable diseases have been less destructive than usual this summer. For the period of eight weeks since July 1st there was a decrease from last year of twenty per cent. in the number of cases of diphtheria reported, a decrease of twenty seven per cent. in the number of cases of measles reported while scarlet fever decreased fourteen per cent.

While infantile paralysis usually increases during the spring and summer months, this year the increase has been marked in some localities. Thirty-two States reported 1463 cases of infantile paralysis for eight weeks this summer and 635 cases last year for the same period. This increase is particularly noticeable in California, Minnesota, Missouri, New Jersey, North Dakota, South Carolina, and Wisconsin. With the coming of cooler fall weather the danger from this disease diminishes.

For many years the incidence of typhoid fever has been decreasing in the United States. The general death rate in 100,000 population in the registration area dropped from 35.9 in 1900 to 6.8 in 1923. This year, however, there seems to have been a slight reaction. Since the first of July, thirty three States have reported 7173 cases of this disease, which may be compared with 5013 cases last year, an increase of forty three per cent. Some of this apparent increase, however, may be due to more nearly complete reporting of cases.

The ports of Oakland and San Pedro, Calif., and New Orleans, La., have been declared free from plague and outgoing quarantine measures have been discontinued. The Mexican authorities upon information tendered by the Public Health Service have agreed to the discontinuance of the disinfection of mails from Los Angeles, Calif., and also to the suspension of the fumigation of freight trains from that city except in cases in which the Public Health Service deems this measure necessary.

Because of the absence of yellow fever from Mexican, Central and South American ports and the very low incidence of this disease even in countries where it is present, there has been no "close quarantine" this year on account of yellow fever, which means, of course, that there has been no detention of passengers. The absence of yellow fever in Latin American countries is unquestionably due to the relentless campaigns which have been carried on against the yellow fever mosquito. The Surgeon General expressed the hope that the authorities of those countries where yellow fever infection still remains at the present time will continue the work of extermination until quarantine authorities will no longer have to consider measures against this disease.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

MALADIES DE LA BOUCHE. Par le Dr. R. Nogué. Traité de Stomatologie. Illustre. Paris: J.-B. Baillière et Fils, 1924. Pp. 470.

APHORISMEN ZUM HEILPROBLEM. Modern Biologie, Heft 9, Von Prof. Dr. Hans Much. Leipzig: Curt Kabitzsch, 1925. Pp. 101.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints, Volume LIII. New York: The Rockefeller Institute for Medical Research, 1925. Pp. 617.

STATISTICAL METHODS FOR RESEARCH WORKERS. Biological Monographs and Manuals, III. By R. A. Fisher, M.A. London and Edinburgh: Oliver and Boyd, 1925. Pp. 239.

THE MEDICAL CLINICS OF NORTH AMERICA. St. Louis Number, July, 1925. Volume IX, Number I. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 275.

THE FATS. By J. B. Leathes, M.A., M.B., F.R.S. and H. S. Raper, C.B.E., M.B., Ch.B., D.Sc. Second Edition. New York and London: Longmans, Green and Company, 1925. Pp. 242.

THE SURGICAL CLINICS OF NORTH AMERIA. Mayo Clinic Number, June, 1925. Volume V, Number III. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 633-393.

LA SYPHILIS. Son Aspect Pathologique et Social. Par E. Jeanselme. Science et Civilization, Collection d'Exposes synthetiques du savoir humain. Paris: Gauthier-Villars et Cie, 1925. Pp. 407.

REPORT OF THE PHILIPPINE HEALTH SERVICE. For the Fiscal Year from January 1 to December 31, 1923. Vicente de Jesus, M.D., Director of Health. Manila: Bureau of Printing, 1924. Pp. 741.

FORMULAIRE DES MÉDICAMENTS NOUVEAUX POUR 1925. Par Dr. R. Weitz. Préface de M. le Pr. Paul Carnot. Ancien Formulaire Bocquillon-Limousin. Paris: J.-B. Bailliere et Fils, 1925. Pp. 224.

CHIRURGISCHF OPERATIONSLEHRE. Für Studierende und Arzte. Von Prof. Dr. Friedrich Pels Leusden. Vierte, wesentlich verbesserte Auflage. Mit 771 Abbildungen. Berlin und Wien: Urban & Schwarzenberg, 1925. Pp. 732.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume XI., Surgery. Part 2, Empyema, Maxillofacial Surgery, Opthalmology, Otolaryngology. Prepared under the direction of Maj. Gen. M. W. Ireland, M.D. Washington: Government Printing Office, 1924. Pp. 827.

HANDBUCH DER BIOLOGISCHEN ARBEITSMETHODEN. Abt IV, Angewandte chemische und physikalische Methoden, Teil 6, Heft 2. Methoden zum Studium der Funktionen des Magendarmkanals. Von Friedrich Uhlmann-Basel. Mit 55 Abbildungen in Text. Berlin und Wien: Urban & Schwarzenberg, 1925. Pp. 463-620.

DISEASES OF THE BRONCHI, LUNGS AND PLEURA. By Frederick T. Lord, M.D. Second Edition, Thoroughly Revised, with the Addition of a Chapter on Pulmonary Tuberculosis. Illustrated with 107 Engravings and 3 Colored Plates. Philadelphia and New York: Lea and Febiger, 1925. Pp. 776.

PSYCHOANALYSIS AND THE PSYCHIC DISORDERS OF GENERAL PARESIS. Nervous and Mental Disease Monograph Series No. 42. By Stefan Hollós and S. Ferenczi. Authorized English by Gertrude M. Barnes and Gunther Keil. New York and Washington: Nervous and Mental Disease Publishing Company, 1925. Pp. 48.

THE VITAL CAPACITY OF THE LUNGS. A Handbook for Clinicians and Others Interested in the Examination of the Heart and Lungs Both in Health and Diseases. By J. A. Myers, M.S., Ph.D., M.D. With introduction by S. Marx White, M.D., F.A.C.P. Baltimore: The Williams and Wilkins Company, 1925. Pp. 140

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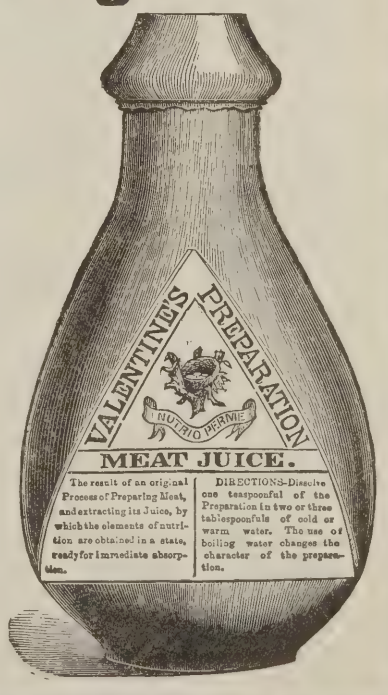
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Miscellany.

Air Mail Transportation.—In this present time of rapid transit and highest possible speed, applied to the practice and even to some of the ideals of living, means of speedy communication are vital to success in the business and professional worlds. The recent installation of air mail service is the most useful and important measure of postal improvement since the adoption of the railway postal car system in the sixties.

Perhaps few of us have realized that transmission of mail by air has been cut to less than one half the time it takes by train. Letters dispatched by air mail from New York city about nine p. m. are delivered at their address in Chicago by the first delivery the following morning, so that material to be forwarded by train from Chicago to other points is enabled to move by the first morning train instead of by one leaving in the evening. Thus delivery from Chicago to other points is expedited by at least twelve hours, and often much more. A similar gain in time is made with respect to other air mail stations where mails are transferred to railroads for distribution in adjacent territory.

It is selfevident that in many business and professional transactions this time gained is of much importance. In view of the value of such expedited mail service, the extra postage charge is negligible.

To give an illustration of one of the many ways in which physicians' work may be benefited by this shorter time for mail transportation, a research worker at the New York Academy of Medicine received a telegram from a Chicago physician asking her to abstract for him some important material which he wished to make use of in an address scheduled for the next afternoon. The telegram arrived at ten in the morning, she was able to finish making the abstracts by five that evening, and dispatched her copy to Chicago by the evening air mail. She heard later that the material arrived in time, and the doctor made use of it at his afternoon talk.

Are Calories Old Fashioned?—In his presidential address delivered before the American Neurological Association in Washington last May, Frederick Peterson (*Archives of Neurology and Psychiatry,* October, 1925) recalled the saying of Hippocrates that there are ills, no less dreadful than those of repletion, arising from deficiency of diet. Twentieth century medicine has had its attention attracted to such deficiency disorders in striking ways. It is being admonished that, "in a land literally flowing with milk and honey, several million children in the public schools suffer from malnutrition." Peterson advanced the thesis that neurasthenia, a common ailment having a professionally unpopular designation, has failed to receive the critical consideration which its widespread occurrence dictates, and that it deserves to be studied from the standpoint of nutrition and fatigue. As if to point a promising direction for the desired research, the neurologist remarks: "We are just beginning to realize that the calories have gone out and the vitamines have come in." One who has read these columns of THE JOURNAL in recent years must admit that the newly recognized food factors have found consideration and that the promise which they hold for the advancement of practical therapy has not been overlooked.

Mendel (*The Chemistry of Life,* Yale University Press, 1923) has well remarked, however, that we are living in a period of hectic anticipation of novelties, when much is expected of science; and the momentary enthusiasm for the new is apt to bring about indifference to the old. The fact is that the appreciation of the calorie idea in nutrition has not gone out but, on the contrary, has become a permanent part of every day science. Lest we forget, it may be worth while to recall what an adequate appreciation of the energy factor means for presentday medicine. Basal metabolism and its variations in disease are measured in terms of calories. The formerly unappreciated large food fuel needs of the growing child are dealt with in the same terms. As Mendel has expressed it, the better appreciation of the nutritive needs of those destined to become the rank and file of our nation when they are grown up—an appreciation based alike on experimental studies and on statistical data as to food habits—is not the least of the contributions which the science of nutrition has made to public welfare during the last decade.

The food dictators of the future will no longer be excused if they estimate the food needs of peoples in the once conventional terms of "man values" wherein the requirements of the child population were calculated as a fraction of the adult needs proportional to the smaller weight and stature of the young. The high calorie diets in fevers have revolutionized the management of the typhoid patient in determinable ways. The reduction of obesity has become an experiment in rational low calorie feeding.—*Jour. A. M. A.,* October 24, 1925.

Preventive Medicine in 1825.—That the interests of the organized medical profession in New York State in preventive medicine is by no means an entirely recent development has been pointed out by Dr. Joseph S. Lawrence, executive officer of the Medical Society of the State of New York.

In delving into the history of the organization with which he is connected, Dr. Lawrence brought to light the following interesting information which appears in the transactions of the New York State Medical Society for the year 1825.

The society held its annual meeting at Albany, twelve members being present. Dr. Felix Pascalis, of New York, was chairman of a committee previously appointed "to prepare and report prize questions." The committee's report contained the recommendations:

"That the question on the history, causes and treatment of whooping cough be continued for another year, as it appears that one only dissertation has been obtained, and it is hoped that a greater and sufficient concurrence of labor on such an important subject can yet be procured."

"That among the new prize questions to be selected be one on the American goitre, showing in what section of the State of New York, and of other states it prevails, and by what atmospheric or topographic influence that affection of the thyroid gland is aggravated, and by what remedy it can best be relieved or cured."—*Health News,* August 31, 1925.

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Coffee Drinking by the Aged.—The human body with advancing age has a marked tendency to become more sensitive to stimulants such as caffeine, and the excitement of the nerve centres is less well borne in senescence than in the prime of life. With age comes increased nervous irritability and the need for more repose and sleep. The use of such stimulants as coffee and tea by old people is, therefore, of questionable propriety.

Professor Oliver T. Osborne recently pointed out (MEDICAL JOURNAL AND RECORD, December 3, 1924), some of the dangers that are likely to accompany a tea or coffee habit in old age. He says: "The action of caffeine (on the aged) is to increase general nervous irritability, cause polyuria, and especially to stimulate the thyroid and parathyroids to abnormally increased activity, with the result of more nervous irritability and muscular irritability and trembling. Caffeine often raises the blood pressure where such an increase of blood pressure is not needed." He states further that coffee and tea are likely to increase the production of uric acid and that this substance is liable to irritate the kidneys and cause muscle and joint pains in old people. Professor Osborne is of the opinion that caffeine containing beverages serve no useful purpose in the case of the aged and that caffeine should be entirely avoided except in instances where the therapeutic use of the alkaloid is indicated.

Dr. Malford W. Thewlis, in the second edition of his book entitled *Geriatrics*, calls attention to the increased susceptibility of old people to the stimulating action of tea and coffee. He urges a curtailment of the use of these drinks in senescence. The use of caffeine containing beverages with the evening meal he considers very prone to interfere with sleep. Dr. Thewlis directs notice to the supersensitiveness which old people frequently exhibit towards certain drugs; he believes that the old rule that "children and the aged cannot stand large doses" is not without foundation. Ordinary observation shows that the aged are more susceptible to caffeine than younger persons. It is not at all uncommon to hear individuals past the prime of life say they can no longer drink coffee because it keeps them awake.

Even Professor Samuel C. Prescott, who made an investigation of the effects of coffee and came to the conclusion that it is harmless for the majority of adults, says that "many individuals find with advancing years that smaller quantities of coffee will suffice," thus conceding that people do become more sensitive to caffeine as they grow older.

It is generally known that caffeine stimulates the heart's action and thus tends to raise the blood pressure. While caffeine is a vasodilator as well as a heart stimulant, its dilating action upon the hardened vessels of the aged will be less effective than in the case of younger persons; hence the increased pressure due to the heart's action will not be compensated for by relaxed arteries, and the blood pressure will accordingly increase.

Finally, it can be stated that in old age sedatives rather than stimulants, such as caffeine, are called for; old people should avoid the stimulants tea and coffee, not only because they are undesirable irritants of the nervous system, but also because they have a harmful effect on the blood pressure, cause excessive uric acid production within the body, and may, as Professor Osborne points out, produce abnormal activity of the thyroids and parathyroids.

Educational Ideals in Medicine.—Prof. John Fraser, who was appointed regius professor of clinical surgery at the University of Edinburgh in March of this year on the retirement of Sir Harold Stiles, recently delivered his inaugural lecture in the anatomy lecture theatre of the University. Principal Sir Alfred Ewing presided. Under the title of "De Novo," Prof. Fraser spoke on the course he would wish his education to follow were he given a fresh start, or, in other words, on his educational ideals. He said that he had regretfully to confess that with every year the profession of medicine became more of a science and less of an art, and that to keep abreast of the times medical teaching grew increasingly difficult. In this age of specialization the medical curriculum made such demands upon the student that there must be specialization in the preparation for it.

The previous education of the average student when he entered a university was deficient in one vital aspect—he had never been taught the logical processes upon which the acquisition of knowledge was based. The science of induction, observation, elimination of the irrelevant and inference were a closed book to him, or, if he used them, it was as a blind and purposeless instrument which bore no fruit because it was never enriched by the stimulus of purpose. From bitter experience he would say that that was a matter of the most extreme importance. Between man and man there was little material difference where the mental machinery was concerned; it was the manner by which it was worked and the method on which it was treated that spelt the difference between success and failure. He would suggest that the most productive course for the later school years would be a liberal general education, a sufficient knowledge of Latin and Greek to enable the student to understand the etymology of his profession, as perfect a knowledge as it was possible for him to acquire of French and German, and progressively intensified instruction in the basic or natural sciences—physics, chemistry, and biology. On leaving school he considered it a great advantage for a student to take an arts course before embarking on the study of medicine, because, in the words of Sir George Newman, it was "'essential to his proper professional education that it should be deeply infused and inspired by the broadest and most liberal culture, from which he may derive mental discipline, the scientific habit, and an intellectual mastery of the principles involved in his profession." Were he again a medical undergraduate, Prof. Fraser said, he would desire to be taught analytically, he would welcome the extended use of the revision and tutorial class, and he would like to see note taking at lectures abolished, its place being taken by printed synopsis slips distributed the day before. If medicine was once the fostermother of science, Prof. Fraser concluded, science was now the mother of medicine, and a medical career, preparatory, undergraduate, and postgraduate, must therefore be planned scientifically. —*Lancet*, October 24, 1925.

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Mental Hygiene.—Some of the more important activities and results of the Committee on Mental Hygiene during the past year are:

1. At the request of the Governor, helped organize Statewide Citizens' Committee on Protection of the State's Unfortunates, through which committee an intensive campaign was carried on to secure popular support for the proposed $50,000,000 bond issue for State institutions.

2. Aided the Citizens' Committee in preparing detailed recommendations as to allotment of first year's proceeds after careful study of the needs of the State institutions. These recommendations were adopted by the Governor and the Legislature.

3. Supported special bill creating a new civil State hospital, the fourteenth in the State, at Wingdale, Dutchess County, now known as the Harlem Valley State Hospital.

4. Aided in bringing to the attention of appropriating authorities the needs of the State institutions as to repairs, improvements, and fire prevention measures not provided for by the bond issue. $1,000,000 was appropriated for fire prevention and safety measures.

5. Cooperated with the State Hospital Commission, the State Commission for Mental Defectives, and the State Hospital superintendents in the further development of clinic facilities and the preventive program.

6. Continued the work of popular education in mental hygiene.

7. Kept in touch with the State Department of Education with reference to the progress of special classes for backward children. Since the State aid for special class teachers, which the committee assisted in securing, went into effect at the beginning of the last school year, 25 new classes have been established, and 15 communities, not previously having special classes, established one or more.

8. Through a special subcommittee, made a careful study of Congressional bills on immigration with reference to provisions for exclusion of the mentally unfit, conferred with authorities in Washington, and made recommendations to the Secretary of Labor. Also supported State authorities in their effort to recover approximately $17,000,000 from the Federal Government for the care of insane aliens in the New York State hospitals from 1882 to 1921.

9. Initiated special effort in cooperation with the State Hospital Commission to provide better facilities for the temporary care of patients while awaiting admission to State hospitals; made a study of psychiatric facilities at Westchester County Hospital.

10. Through special subcommittee, outlined definite program for promotion of research in mental hygiene, which program will serve as a basis for action during the coming year.

11. Issued special pamphlet and conferred with New York City authorities with reference to the provision of more adequate facilities for the temporary care and treatment of the mentally sick in New York City, and in particular the provision of a new psychiatric reception building in connection with Bellevue Hospital and Kings County Hospital.

12. Served as a bureau of advice and information relating to mental hygiene inquiries involving advice to patients as to where and how to secure treatment.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

OPOTHÉRAPIE ENDOCRINIENNE. Bases Physiologiques Syndromes, Posologie. Par Guy Laroche. Paris: Masson et Cie, 1925. Pp. 256.

THE SCIENCE OF BIOLOGY. An Introductory Study. George G. Scott, Ph.D. New York: Thomas Y. Crowell Company, 1925. Pp. 617.

MIDDLE AGE AND OLD AGE. By Leonard Williams, M.D. Oxford Medical Publications. London and New York: Oxford Medical Press, 1925. Pp. 296.

EYE, EAR, NOSE AND THROAT MANUAL FOR NURSES. By Roy H. Parkinson, M.D. Illustrated. St. Louis: The C. V. Mosby Company, 1925. Pp. 207.

INTERNATIONAL MEDICAL ANNUAL. Year Book of Treatment and Practitioner's Index. Forty-third Year, 1925. New York: William Wood and Company, 1925. Pp. 548.

VAGOTONIES SYMPATHICOTONIES NEUROTONIES. Les Etats de Déséquilibre du Système Nerveux Organovégétitif. Par A. C. Guillaume. Paris: Masson et Cie, 1925. Pp. 280.

GYNECOLOGICAL UROLOGY. By Lynn Lyle Fulkerson, M.D., F.A.C.S. With 166 Illustrations, Including 86 Original and 14 Color Plates. Philadelphia: P. Blakiston's Son & Co. Pp. 247.

PHYSIOLOGICAL CHEMISTRY.. A Textbook and Manual for Students. By Albert P. Mathews, Ph.D. Fourth Edition, Illustrated. New York: William Wood and Company, 1924. Pp. 1233.

OCULAR THERAPEUTICS. A Manual for the Student and the Practitioner. By Doctor Ernst Franke. Translated by Clarence Loeb, A.M., M.D. St. Louis: C. V. Mosby Company, 1925. Pp. 183.

KINDERHEILKUNDE. Lehmans medizinische Lehrbücher, Band VIII. Von Professor Dr. Hans Rietschel. Mit 75 farbigen Abbildungen und 37 Tafeln und 101 Textabbildungen. München: J. F. Lehmann, 1925. Pp. 442.

SOCIAL ORIGINS AND SOCIAL CONTINUITIES. By Alfred Marston Tozzer. A Course of Lectures Delivered Before the Lowell Institute, Boston, Massachusetts, February, 1924. New York: The MacMillan Company, 1925. Pp. 286.

DIE MEDIKAMENTOSE BEHANDLUNG DER HARNROHRENGONORRHOE DES MANNES UND DEREN PHARMAKOLOGISCHE GRUNDLAGEN.. Von Dr. Alfred Perutz. Mit 13 Kurven in Text. Berlin and Wien: Urban & Schwarzenberg, 1925. Pp. 260.

INDEX OF TREATMENT. By Various Writers. Edited by Robert Hutchinson, M.D., F.R.C.P. and James Sherren, C.B.E., F.R.C.S. Ninth Edition, Revised and Enlarged. New York: William Wood and Company, 1925. Pp. 1036.

TABULÆ BIOLOGICÆ. Band I, Reine und physiologische Physik, Physikalische Chemie und Biologische Anwendungen. Von Ed. W. Junk, Herausgegeben von C. Oppenheimer und L. Pincussen. Berlin: W. Junk. 1925. Pp. 522.

SYMPTOMS OF VISCERAL DISEASES. A Study of the Vegetative Nervouse System in Its Relation to Clinical Medicine. By Francis Marion Pottenger, M.D., F.A.C.P. Third Edition. With Eighty-six Text Illustrations and Ten Color Plates. St. Louis: C. V. Mosby Company, 1925. Pp. 394.

SOME FUNDAMENTAL CONSIDERATIONS IN THE TREATMENT OF EMPYEMA THORACIS. By Evarts A. Graham, A.B., M.D. An Essay Which Was Awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery in 1920. Illustrated. St. Louis: C. V. Mosby Company, 1925. Pp. 110.

METHODS IN SURGERY. Used in the Surgical Divisions of Barnes Hospital, St. Louis Children's Hospital, and Washington University Dispensary. Including Outlines for Case History Taking, Preoperative and Postoperative Care of Patients, Routines, Diets, etc. By Glover H. Copher, M.D. St. Louis: The C. V. Mosby Company, 1925. Pp. 232.

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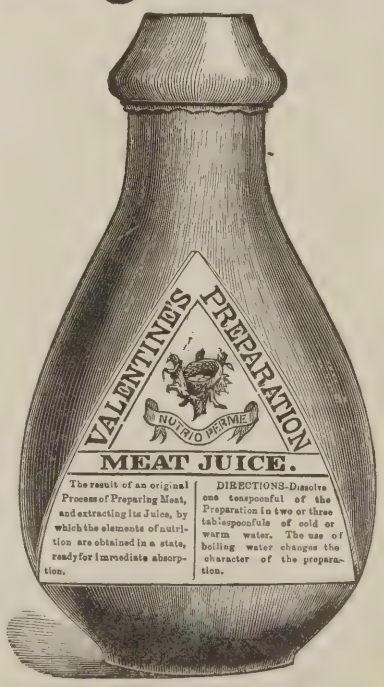
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S 160

Miscellany.

English Women in Medicine.—The history of English women in medicine, writes Dr. Mary McKibben Harper (*Medical Woman's Journal,* September, 1925), begins with Elizabeth Blackwell, born in London, who was given the M.D. degree in the United States, returning to London to practise prior to the law for registration of doctors. Her name was included in the first register of Great Britain and Ireland. Elizabeth Garrett Anderson was the first woman to qualify in Great Britain, and she and Dr. Blackwell were the only women on the register in 1874. Sophia Jex-Blake, Mrs. Thorne and three others guaranteed a hundred pounds and were given extra mural instruction at Edinburgh University. The death of Sir James Simpson deprived them of an influential friend, and the Edinburgh episode closed with the resignation of the whole board of examiners rather than give qualifications to women. Then Miss Jex-Blake and her sympathizers founded the London School of Medicine for Women, and in 1877 the Royal Free Hospital.

Voltaire and Medicine.—At a recent meeting of the Section of the History of Medicine of the Royal Society of Medicine, the president, Dr. J. D. Rolleston, discussed Voltaire's relations to individual doctors and the medical profession as a whole, and gave some account of Voltaire's illnesses. Apart from smallpox, influenza, and pneumonia, he does not appear to have had any acute infectious diseases. He was subject to chronic dyspepsia from an early age, and suffered from catarrhal bronchitis, often associated with deafness and aphonia. He frequently complained of febrile attacks, which may have been malarial in origin. His death at the age of eighty-four was probably due to uremia following cystitis secondary to enlargement of the prostate. During his long and eventful life Voltaire was brought into contact with medical men on numerous occasions, both professionally and socially. Moreover, his works, particularly his correspondence, the *Dictionnaire Philosophique,* his tales, and to a less extent his historical works and miscellaneous essays and pamphlets, abound with references to the medical profession. In striking contrast, however, with Molière's works, in none of Voltaire's numerous plays, which for the countrymen of Shakespeare are the least readable part of his writings, does a doctor figure as one of the *dramatis personæ,* nor are there more than one or two vague references to medical matters.

Among the numerous doctors whom Voltaire consulted the best known were Silva, physician to Louis XIV, Boerhaave, whose name occurs often in Voltaire's works, especially in connection with chemistry, and Tronchin, whom he described as the greatest physician in Europe, and the only one who understood nature. Voltaire was far from being an ideal patient. Like Herbert Spencer a hundred years later, he was too fond of arguing with his doctors and too little inclined to carry out their instructions. He told one of his medical correspondents that he had read more works on medicine than Don Quixote had on chivalry.

Throughout his writings many references are to be found to some of the masters of medicine, such as Hippocrates, Rhazes, Servetus, Harvey, and Sydenham, as well as to celebrated anatomists such as Vesalius, Ruysch, Bartholin, and Vieussens; but the medical work with which he was probably most familiar was that of Astruc on the venereal disease. The passages in which Voltaire indulges his satirical humor at the expense of the medical profession are few in comparison with those in which he expresses his admiration and gratitude, and, apart from the stories, are chiefly to be found in his correspondence, where (Dr. Rolleston remarked) they are not to be taken too seriously. On the other hand, Voltaire was scathing in his denunciation of quacks, of whom the most notorious was the Swiss uromantist Schuppach, and vented his ridicule on many superstitious and erroneous doctrines connected with normal and morbid processes.

Dr. Rolleston's paper was accompanied by an exhibition of Voltariana, mainly arranged by the well known antiquary, Mr. A. Forbes Sieveking. These objects included an unpublished portrait by Woolidge, the first English edition of the *Lettres sur les Anglais,* which contains a celebrated letter on inoculation, of which Voltaire was an ardent propagandist throughout his life, and the original manuscript of an English letter by Voltaire, lent by Mrs. Francis Edwards. —*British Medical Journal,* October 31, 1925.

The Future of the Medical Sciences.—A Budapest scientific periodical, according to the *Medical Press and Circular,* has sent questionnaires to scientists asking for their opinions as to the future of the various branches of science. Perhaps the most interesting of the answers was that of Dr. Hümér Hültl, of the department of surgery at Budapest, who said that, taking as a basis the work of recent years, we are entitled to prophesy the following future for teratology and nosology, the former dealing with hereditary anomalies and the predisposition to disease, by protecting maternity, and by means of hygiene and eugenics. "In several states of America and also in Switzerland the sterilization of the unfit is lawful. The bill in regard to castration of those who from the community cannot expect anything, is before the special Commission of the German Reichstag. It can be hoped that those deforming and heroic operations now performed on cancer patients, by which the lives of hundreds are saved, will become superfluous in the next score of years. An American physician, Miss Maud Slye, succeeded in cultivating stocks of mice, in which all the individuals developed cancer, but could not be inoculated with it at all. It seems probable, therefore, that the tumor is only a symptom of the cancerous organism. In the next twenty-five years serology will find out why the organism is able to resist cancer, and then the utter anarchy of the cancerous cells will come to an end. On the other hand, if such a disease befalls the organism, necessitating an operation, the danger will be reduced to a minimum. It can be expected that future progress will greatly decrease the risks of narcosis. Surgery is losing ground, but we can anticipate that it will gain new domains. Theoretically it is not at all impossible that the surgeon will transplant healthy organs to replace unsound ones, just as the watchmaker substitutes a new wheel for an old one."

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I want to congratulate you on my condition. I now weigh 122 lbs., very good color in my face, no sugar in the urine, very little blood sugar, no diacetic acid, no acetone.

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Rev. Joseph V. Sweeney.

Literature on request

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Tattooing Among Primitive Peoples.—Dr. Bertholin, of Tunis, has recently published an interesting memoir on the neolithic origin of tattooing among the true aborigines of Northern Africa. The practice of tattooing among them is "a prolonged archaism," of which we must look for the first indications in quaternary times. The figures given by him show that more than three thousand years ago the tattooing on figurines found in the tombs of Nagada is found today in the same characters, with the drawings identical, on the same parts of the body, among the Berbers of Northern Africa.

Among these primitive peoples the ornamental drawings varied but little. The same types of lines and figures was used on pottery, in drawings on stone, and for the paintings and tattooings made on human bodies. Such are the concentric curves, crossbars, triangles and notched lines. These tattooings of primitive men are marks of relationship, signs of recognition, immutable amulets attached to the individual, symbols which were reproduced on the stylus of his tomb.

In proportion as the social milieu was developed, these costumings were adapted to the new mode of life. But throughout history tattooing remains a religious rite, a hieratic symbol, a consecration. It is sometimes a record of family or caste, sometimes a professional emblem, sometimes a talisman, sometimes a brand of disgrace. It was among the Thracians, according to Herodotus, a sign of aristocracy which the lower classes were not entitled to wear. Antique vases of the fifth century show maenads or Thracian women tattooed on the arm or leg with the picture of a fawn; the fawn was the symbol of Dionysius; in the bacchic orgies the maenads dismembered it alive and devoured it raw. On the contrary, classic Greece, the period of Homer, with its admiration for physical beauty, did not adopt the practice of tattooing.—Translated from *Æsculape*.

Nicolas Monardes and His Drug Catalogue.—An interesting recent reprint by Constable of London is Joyful Newes Out of the Newe Founde Worlde, written in Spanish by Nicolas Monardes, physician of Seville, and Englished by John Frampton, Merchant, Anno 1577; with an introduction by Stephen Gaselee. In commenting on this reprint, the *Medical Press,* London, tells us that Monardes was born in Seville in 1493, and, after pursuing medical studies at the university, returned to practice in his native city. Spain was approaching her zenith. The wealth of the Indies was pouring in, and, apart from material riches, new medicines unknown to European physicians, but reputed by the natives to possess a potency almost magical, were introduced into the science of medicine. It was the story of their curative virtues, of the wonderful results which they had wrought when administered to the Indians, the conquistadores, and the European colonists, that induced Monardes to compile several catalogues of the drugs of the Indies. The above mentioned reprint is one of these. Monardes devotes considerable space to a description of tobacco, and Frampton adds a supplementary section of his own entitled "Nicotaine," after Nicot, the French ambassador at Lisbon, who was instrumental in introducing the weed to his own country by sending an account of its virtues and delights to Catherine de Medici, then Queen.

Monardes describes how the smoking habit spread from the natives to the Spaniards, and the deep narcotism effected by it, those indulging lying as though dead for hours, and experiencing illusions and visions which he attributes to the devil. He deals more fully, however, with the external application of tobacco as a plaster, attributing to it the power of purifying and healing wounds, and with the native habit of chewing it to allay the pangs of thirst and hunger.

Gifts to Jefferson Medical College.—Announcement has been made of the presentation by Dr. J. Ackerman Coles, of Newark, N. J., of two valuable gifts to Jefferson Medical College. One is a portrait of William Harvey, by Van Dyck, which formerly belonged to Oliver Wendell Holmes. Dr. Coles had already given to the library of the college a copy of Geneva edition of the works of Hippocrates, printed in 1657, and translated into Latin by Foesius. This was long considered the best of the translations for purity, fidelity to the text, and excellence of annotations. It contains the glossaries of Erotian, Herodotus (the physician), and Galen, and in addition the *Œconomia Hippocratis,* a collection of all the obscure terms to be found in the works of Hippocrates.

Goitre in Paintings by the Old Masters.—In the August issue of *Nederlandsch Tijdschrift v. Geneeskunde,* Van Leersum gives ten reproductions of Madonnas by old masters, and a list of other portraits in which the artist has depicted more or less thyroidal enlargement. He also notes the prominence of the thyroid cartilage in female portraiture and sculpture of the same period, and deduces from the large number of instances in which each of these enlargements are represented that in the fifteenth and sixteenth centuries, to which these portraits refer, such pathological conditions were common. This being so, he argues that the modern prevalence of goitre is not to be attributed to causes which have arisen during recent times.—*Medical Press and Circular,* October 28, 1925.

The Correlation of Federal Health Agencies.—Linsly R. Williams, New York (*Journal A. M. A.,* November 7, 1925), calls attention to the present lack of correlation of federal health agencies, many of which are accomplishing very valuable and significant results. While making certain general suggestions for coordination, no recommendation for any definite plan is made. There is no doubt that in the interests of efficiency there must be practical coordination and that this should be brought about as soon as possible. While the care of the public health in this country is, under our form of government, primarily vested in the individual states, the federal government does have certain proper duties, such as those involving foreign and domestic quarantine, interstate commerce, research, revenue matters, and the care of the health of the wards of the government. These duties can undoubtedly be more effective and can contribute more completely to the enhancement of national health and happiness, if they are conducted in a more unified way, thus supplementing the many notable achievements which these federal bureaus already have to their credit.

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Report by the Children's Bureau on Juvenile Courts.—Better facilities for scientific treatment of the child delinquent and larger, better trained, better paid probation staffs, are the outstanding needs of the juvenile court in the average city, according to a report recently made public by the Children's Bureau of the United States Department of Labor.

The report is based on data furnished by the children's courts of ten representative cities—Boston, Buffalo, Denver, the District of Columbia, Los Angeles, Minneapolis, New Orleans, San Francisco, Seattle and St. Louis. Conferences on juvenile court standards have resulted already from the Bureau's inquiry, and a committee of judges, probation officers and others directly concerned has formulated standards for the better organization and administration of the juvenile court.

Summarizing the detailed consideration of the methods and organization of the ten courts studied, the authors of the report state: "In general the resources at the disposal of the court seemed to have been developed in a haphazard manner, and did not fit together to form a complete community program for the care of delinquent and dependent children. The court therefore was limited in the treatment it could prescribe." Important points considered by the Bureau were the amount of time devoted by the judge to juvenile court work, the training and size of the staff, the method of dealing with children being detained pending hearing, the facilities for physical, mental and social examination of the child, the character of the hearings, the cooperation between the courts and the social forces of the community. With regard to these points the report states:

Only five of the ten courts were served by judges devoting full time to juvenile court work—those of Boston, Buffalo, Denver, New Orleans and the District of Columbia, though in Los Angeles the judge gave part of his time and a woman referee full time. The number of probation officers attached to the courts varied from four to twenty-six. In seven of the courts the majority of the probation officers had had no previous experience in occupations allied with probation. Of conditions of employment among the probation staffs, the report states that the low salaries paid in most of the courts studied and the absence of defined requirements for entrance into the probation service naturally resulted in probation staffs whose members, as a rule, had little preparation for their work through education or previous experience. Study of the child and his family and successful reconstructive work not only call for certain indispensable personal qualities, but also demand the knowledge and skill that come only from training and experience. "To secure such service, it is essential that the authorities to whom probation officers are responsible and the general public recognize its character and importance and provide compensation adequate to attract and hold a qualified personnel. In spite of these limitations, however, the Children's Bureau states that what facts could be secured indicated that the probation method was to a large extent successful.

Policies toward the child who is held pending a hearing varied. One of the well established principles in juvenile court work is that children should not be detained in jails or police stations. Yet eight of the cities reported such detention of children, in some cases as a rare occurrence, in others as a comparatively common practice. Special detention homes for children waiting court action are usually considered the most feasible arrangement for large cities, and six of the ten cities studied had such buildings available. Some of the detention homes, however, were seriously overcrowded, and more space for recreation and better supervision of the children was needed. Another plan of detention which does not involve the use of a special building had been tried out in Boston, and is believed by the Bureau to be especially applicable to courts is small cities or rural districts. This is the plan of placing the children for detention in private families to which a monthly subsidy is paid in addition to a certain sum for each child.

Facilities for social investigation and thorough study of the child's physical and mental condition were limited in the courts. Only the Boston court had provision at the time of the inquiry for well rounded study of all important cases, including the social, physical and mental factors. The work of the Judge Baker Foundation of Boston is discussed by the report. Child guidance clinics serving the juvenile court and other agencies have recently been established in St. Louis, Minneapolis and Los Angeles. One of the important features in a number of the courts was the effort made to adjust cases informally. In the Denver court 72 per cent. and in the Seattle court 76 per cent. of all boys' cases were settled is this way. In connection with the formal court hearings two points were considered important—whether hearings were held at frequent intervals so that children were not detained for more than short periods; and whether the public was excluded from the hearings. It was found that in some of the courts delinquency cases might be heard at any time, in others there were five regular hearings a week on such cases, while in still others there was only one such hearing a week. Under the last arrangement, a child might be held as long as nine or ten days.

In connection with its study the Bureau asked the judges and chief probation officers of each court to state in what respects they considered the resources at the command of their court adequate. The statements of these officials emphasized the need for more probation officers, for more adequate provision for delinquent children who do not require commitment to state institutions, better institutional care for the children who do need it, more adequate provisions for the care of mental defectives, and for placing dependent and neglected children in family homes. In conclusion the report stresses the importance of the cooperation of juvenile courts with school departments and social service agencies and institutions. It points out the opportunity of the school in the prevention of delinquency and the conditions that would make it possible for the educational systems developing special methods of dealing with conduct to function more effectively in this respect. In several of the cities studied the school departments were problems, including visiting teachers, psychological clinics, and attendance officers having special equipment for their work and special day schools or classes for truants, unmanageable or incorrigible children.

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

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A Successful Garden Community Under Way.—In 1924 a group of public spirited New Yorkers, realizing the necessity of making available to the average citizen of New York and its vicinity sanitary, light, airy homes, and that the question was one only of ways and means, got together and formed the City Housing Corporation. Its capital was put at $2,000,000, and its management placed in the hands of experienced administrators and real estate investors. All corporation officers were to serve without pay.

The corporation stated its aims as follows: 1. To develop better plans and methods for home and community building, and to demonstrate the advantages of large scale purchasing of land and quantity production of homes. 2. In doing this to build the type of low priced houses that are needed by self respecting citizens of New York. 3. To show home seekers of small income that they can own first class homes for what they are now paying in rent for less satisfactory places. 4. To encourage and develop cooperative methods of home ownership. 5. To demonstrate the value of outdoor play space adjacent to homes and to convince builders and operators that this can be supplied on a practical business basis. 6. To arouse the public to a recognition of the social obligation resting upon it to make it possible for citizens of moderate means to live in decent houses.

The first project of the corporation was the purchase of a tract of land at Sunnyside, Long Island, in March; by January, 1925, 128 families were living in one and two family houses and apartments. All the buildings are of brick, attractively designed and constructed, and equipped with all the modern conveniences. Since the houses are only two rooms deep, every room is an outside one. The corporation is already building its second unit, which will house 125 families, and will occupy the same percentage of landscapes, which amounts to about thirty per cent., against the seventy per cent. permitted by the New York State law. This means that seventy per cent. of the land is to be devoted to lawns, wading pools, basket ball and tennis courts, sand piles, swings, etc. Eventually twelve hundred families will have homes on the corporation's property. Stores are only a block away, and the public school and churches within walking distance.

All the community houses are bought and sold, none rented, so that the capital is kept liquid, and continually turned over in home building experiments and demonstrations. Sales are made on easy monthly payments. The cost of the houses ranges from $8,500 for a six room one family dwelling, to between $11,500 and $13,500 for two family dwellings of from eight to eleven rooms. The average income of purchasers has been $2,400. The occupations represented are building mechanics, office employees, teachers, chauffeurs, salesmen, housekeepers, grocers, printers and cooks.

The corporation's chief aim is to provide as many homes as possible for people of moderate incomes, and to demonstrate at the same time the business soundness and practical character of such large scale building to commercial builders, thus giving to those of moderate means the same advantages of desirable surroundings now available only to the wealthy.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

OLD AND NEW VIEWPOINTS IN PSYCHOLOGY. By Knight Dunlap. St. Louis: The C. V. Mosby Company, 1925. Pp. 166.

TRAITEMENT DU DIABÈTES. Par Pedro Escudero. Paris: Norbert Maloine, 1925. Pp. 276.

MOTHER'S MANUAL. The Coming and Care of the Baby. By Dorothy Bocker, M.D. New York: Brentano's, 1925. Pp. 247.

PERSONAL AND COMMUNITY HEALTH. By Clair Elsmere Turner. Illustrated. St. Louis: The C. V. Mosby Company, 1925. Pp. 426.

THE MINISTRY OF HEALTH. By Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. London and New York: G. P. Putnams Sons, Ltd., 1925. Pp. 271.

PHYSIOTHERAPY. Theory and Clinical Application. By Harry Eaton Stewart, M.D., Illustrated. New York: Paul B. Hoeber, Inc., 1925. Pp. 351.

ON WRITING THESES FOR M.B. AND M.D. DEGREES. By Sir Humphrey Rolleston, Bart., K.C.B. London: John Bale, Sons & Danielsson, Ltd., 1925. Pp. 28.

ETUDE SUR VIELLESSE ET LE RAJEUNISSEMENT PAR LA GREFFE. Par le Dr. Serge Voronoff. Avec 35 Planches hors Texte. Paris: Librairie Octave Doin, 1926. Pp. 170.

STUDIES IN IODINE FEEDING. Part 1, Potassium Iodide Feeding Beneficial to Young Swine. By John M. Evvard and C. C. Culbertson. Iowa State College, Research Bulletin 86.

DIAGNOSE UNE THERAPIE DER GONORRHOE BEIM WEIBE. Von Sanitätsrat Dr. S. Jessner. Dermatologische Vorträge für Praktiker, Heft 25. Leipsig: Curt Kabitzsch, 1925. Pp. 94.

ALLERGY. Asthma, Hay Fever, Urticaria and Allied Manifestations of Reaction. By William W. Duke, Ph.B., M.D. With Seventy-five Illustrations. St. Louis: The C. V. Mosby Company, 1925. Pp. 339.

TRANSACTIONS OF THE JAPANESE PATHOLOGICAL SOCIETY, Volume XIII. The Thirteenth Annual Scientific Session Held in Tokyo, 1923. Tokyo: Pathological Institute of the Imperial University, 1925. Pp. 235.

THE CULTURE OF THE ABDOMEN. The Curb of Obesity and Constipation. By F. A. Hornibrook, Preface by Sir William Arbuthnot Lane. Second Edition. New York: William Wood and Company, 1925. Pp. 63.

HISTORY OF MEDICINE. By Dr. Max Neuburger. Translated by Ernest Playfair, M.B., M.R.C.P. Volume II, Part I. Oxford Medical Publications. London and New York: Oxford University Press, 1925. Pp. 135.

FEEDING AND THE NUTRITIONAL DISORDERS OF INFANCY AND CHILDHOOD. By Julius H. Hess, M.D. Illustrated with Forty-two Engravings in the Text and One Full Page Colored Plate, Fourth Revised and Enlarged Edition. Philadelphia: F. A. Davis Company, 1925. Pp. 556.

REPORT OF THE PHILIPPINE HEALTH SERVICE. For the Fiscal Year From January 1 to December 31, 1923. Vicente de Jesus, M.D., Director of Health. Manila: The Government of the Philippine Islands, 1924. Pp. 741.

THE NORMAL DIET. A Simple Statement of the Fundamental Principles of Diet for the Mutual Use of Physicians and Patients. By W. D. Sansum, M.S., M.D. Illustrated. St. Louis: The C. V. Mosby Company, 1925. Pp. 72.

TEXTBOOK OF PATHOLOGY. With a Final Section on Postmortem Examinations and the Methods of Preserving and Examining Diseased Tissues. By Francis Delafield, M.D., LL.D. and T. Mitchell Prudden, M.D., LL.D. Thirteenth Edition, Revised by Francis Carter Wood, M.D. With Eighteen Full Page Plates and Eight Hundred and Ten Illustrations in the Text in Black and Colors. New York: William Wood and Company, 1925. Pp. 1354.

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S 172

Miscellany.

Voltaire and English Doctors.*—Although we have no record of Voltaire's having been attended for his various illnesses by any physician of London during his residence there, he appears to have had the acquaintance of a number of the medical men of his time. The first of these was Sir Hans Sloane, elected president of the Royal College of Physicians in 1719, and who succeeded Sir Isaac Newton as president of the Royal Society in 1727, the year following Voltaire's arrival in England. The great Frenchman gave Sloane a copy of his English Essays, and of his Essay upon Epic Poetry of the European Nations, both books being autographed.

The next member of the medical profession whom he met in London seems to have been William Cheselden, to whom he alludes in several passages of his works as a personal acquaintance. He describes the famous surgeon's successful operation in a case of cataract, quotes him as having said that he was the first to have his instruments made in London, and refers to several of his opinions on medical and surgical subjects.

Richard Meade is also mentioned a number of times by Voltaire, although in none of these passages does he claim him as an actual acquaintance. He quotes Meade as having said, in discussing the question of the poisonous nature of powdered diamonds, "If I were offered two big diamonds on condition that I swallowed one in powder, I would accept the bargain." Also, Meade's name appears on the list of subscribers to the London edition of *La Henriade,* which contains also the names of three other physicians, given as Dr. Brocksom, Dr. Misobin, and Dr. Chamberlain. The second was probably John Misaubin, who has been credited with being one of the four physicians mentioned in *Tom Jones,* and also as having served as the model for the doctor in the third scene of Hogarth's *Marriage à la Mode.* The other two were probably Dr. Noel Brocksom and Dr. Hugh Chamberlain, the last of the celebrated family of obstetricians.

Among less well known physicians with whom Voltaire was acquainted in London were Dr. Richard Towne, author of a book on diseases of the West Indies and translator of parts of *La Henriade;* John Arbuthnot, James Keill, and Henry Pemberton. That Voltaire had some knowledge of the English medical classics is shown by his allusions to Harvey, Sydenham and Freind. He probably also studied the Philosophical Transactions and gained from them his knowledge of inoculation, of which he was an enthusiastic supporter throughout his life. Other English medical men mentioned by him are John Locke, whom he vastly admired, Samuel Garth, author of *The Dispensary,* Saint-André, court anatomist to George I and the dupe of Mrs. Tofts, the rabbit breeder of Goldaming, and the anonymous author of *Onania,* of which Voltaire tells us that about eighty editions were published, although he also suggests that this was merely a bookseller's trick to gain readers.

Among Englishmen who visited the great philosopher at Ferney were at least three physicians. The most famous of these was Oliver Goldsmith who in his Memoirs of Voltaire has given us a description of the conversation in which Voltaire defended the English against Diderot and Fontenelle. The two others were Samuel Sharp, surgeon to Guy's Hospital, and John Moore, who in one of his books gives us a remarkable description of Voltaire as an old man.

*Abstract of the address made before the Fifth International Congress of the History of Medicine at Geneva, July, 1925, by Dr. John Davy Rolleston.

Pepys and Science.—The Master of Christ's College, Cambridge, himself a writer of picturesque accuracy, is the very man to write with understanding and sympathy about that delightful seventeenth century Horace Walpole whom we know as Samuel Pepys, secretary to the Admiralty, says an editorial writer in the *Lancet,* October 24, 1925. In the current *Quarterly Review,* he goes on to say, Sir Arthur Shipley points out how science in Pepys's time was the "object of an insatiable curiosity, perhaps in a way childish," and how Pepys himself was insatiably curious. Nothing was too odd or too trivial for his notice and record. On March 14, 1662, he met a German, Dr. Kuffler, who came "to discourse with us about his engine to blow up ships," a subject naturally interesting to a high official of the Admiralty. Although he only began to learn the first four rules of arithmetic in his thirtieth year, he was yet a great friend of Edward Cocker, who engraved a slide rule for him.

On account of his defective vision Pepys took much interest in optics and records how in company with Mr. Spong and "my twelve foot glass"—i. e., one with a focal length of twelve feet—"we did see Jupiter" and had "several fine discourses upon the globes this afternoon, particularly why the fixed stars do not rise and set at the same hour all the year long, which he could not demonstrate, nor I either." Let us hope that comprehension is wider nowadays. Pepys was elected to the Royal Society in 1665 and in 1684 became its President. It was during his term of office that Newton's immortal work, the *Principia,* was accepted and published by the Society under Pepys's imprimatur. Many passages in the diary are quoted by Sir Arthur Shipley, which show how constantly Pepys attended meetings and demonstrations, several of which dealt with transfusion of blood. He also at "my Lord Crewe's" and other places met various learned persons who told him extraordinary stories about swallows hibernating, a belief which even Gilbert White held, and one of these, Mr. Templer—"an ingenious man and a person of honour he seems to be," says Pepys with unwonted caution—told a story of how serpents in Lancashire catch larks by crawling under a soaring lark and with wide open mouth eject their poison, whereupon the lark falls down into their jaws. Many similar startling episodes in natural history will be found in the pages of the Rev. Edward Topsell, who wrote a *History of Beasts and Serpents,* to which Dr. Muffett contributed a section upon insects. Pepys relates a story from Muffett about Dr. Caius, and it is not unreasonable to suppose that he was acquainted with Topsell's book, the matter of which would certainly have interested him. So many facets did Pepys present to the world that, as Sir Arthur Shipley puts it, "he appears to have been almost globular."

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Injuries to the Head and Their Sequelæ.—Dr. Raphael Lewy, chief medical advisor of the Bureau of Workmen's Compensation, in an interesting article on head injuries (*Bulletin* of the Medical Division of the New York State Department of Labor) says that since the thickness and resistance of the skull varies in different individuals, injuries to the skull may have very different sequelæ. In thin skulls, a comparatively slight injury may be the cause of death. Since the vault is stronger than the base, fracture of the base of the skull is frequent. Fracture of the skull is not necessarily caused by very severe trauma, nor need the external manifestations of the injury correspond to the severity of the posttraumatic intracranial sequelæ. Hence a skull injury may be followed immediately by severe intracranial symptoms; a fracture may also occur without immediate or serious intracranial sequelæ. "In all head injuries," writes Dr. Lewy, "it is most important to determine whether the posttraumatic sequelæ are due to involvement of the meninges or to the brain substance, and it is therefore a *conditio sine qua non* that the clinician should be familiar with the topography of the important brain centres."

Falls or objects falling on the head may result in contusions of the soft tissues, blood effusions between the scalp and periosteum, wounds of the scalp with or without infection, hematoma beneath the periosteum, fractures of the external or internal table, and fractures of the entire thickness of the skull with or without intracranial injuries. Contusions of the scalp, diagnosed by local swelling, heal in a short time after the absorption of the blood. They may be accompanied, however, by concussion of the brain, depending upon the weight or height of the falling object. If the trauma causes a hemorrhage beneath the periosteum, subperiosteal hematoma may result. If no external wound exists, the blood effusion heals by absorption without any special treatment, usually application of an icebag being sufficient. Any of the conditions enumerated may be accompanied by concussion with manifestations immediate or developing soon after injury. Often headache and vertigo persist long after all other evidence of injury has disappeared. Contusions accompanied by external wounds may result in serious infection, which often heal with painful adherent scars, the causes of future headache and neuralgia. In serious cases, erysipelas may be a complication, causing painful edema of the tissues of scalp and forehead, and often extending over the whole surface of the skull and involving the meninges. This latter complication frequently results in death.

Concussion of the brain is often a sequel of trauma. It may follow contusions of the soft tissues with or without fracture, but most frequently follows fractures. Its most important indication is loss of consciousness, which may be of short duration, or, if accompanied by intracranial hemorrhage, may last until the pressure is relieved. The unconsciousness may be accompanied also by Cheyne-Stokes respiration and by disturbances of the cardiac apparatus, due to irritation of the medulla. The pupils may be irregular and unresponsive to light. If unconsciousness persists, the pulse becomes rapid, small and often hardly palpable, and there may be loss of sphincter control. Those who have suffered from concussion and recovered from immediate symptoms are often able to resume their work for a certain length of time. Then suddenly headache and vertigo may develop, usually subjective and not to be confirmed by any physical examination. There is some controversy among physicians as to these symptoms, some insisting that the patient is a malingerer, and others that the headache and vertigo are attributable to the original skull injury. Dr. Lewy states that his long experience with such cases has led him to the conclusion that, whenever an injury to the skull with or without a fracture has been accompanied by unconsciousness, although of short duration, there is a disturbance in the relationship of intracranial structure, which may manifest itself as headache and vertigo without accompanying physical signs long after the injury.

Acquaintance with individual history plays a large and important part in diagnosing and treating injuries of the skull. Hereditary neurotic tendencies must be taken into account in differential diagnosis between posttraumatic functional neurosis and wilful simulation. Dr. Lewy states that he has found simulation *in toto* exceptional, but exaggeration of existing symptoms frequent. Infection with syphilis and addiction to alcohol may precipitate, after head injury, functional or organic nerve conditions, although the injury may not have shown any serious external manifestations. Compression of the brain is a condition often following fracture of the vault of the skull. The cause of this may be a depressed bone fragment, increased intracranial pressure from hemorrhage, or most frequently laceration of the middle meningeal artery. The clinical picture differs from that of concussion in the flushed face, small, contracted pupils, slow pulse, restlessness, and paralysis of the part of the body corresponding to the involvement of some focal nerve centre due to the compression. If the patient survives, he may suffer from the same sequelæ as those of concussion, and in addition from those resulting from cortical irritation and thickening of the meninges, later developing into pachymeningitis and accountable for the epileptiform and paralytic conditions often following such injuries. In lesions involving the cerebellum, the most important subjective symptoms and clinical signs are headache and vertigo, unsteady gait, a feeling of falling to one side, inclination to nausea and vomiting, pain in the occipital region, and a peculiar spasm of the muscles of the back of the neck. Sometimes posttraumatic diabetes and epileptiform seizures follow.

Since fractures of the vault of the skull often exist without external evidence, they are frequently overlooked, especially in cases of fissure fractures without displacement. Therefore all injuries to the skull should be subjected to a thorough stereoscopic radiographic examination. Cases of fissure fracture without displacement may exist for months without any posttraumatic disability, and then a neurosis may develop. Such cases should be followed up for at least a year. Fractures of the base of the skull, also, need not show physical signs nor be accompanied by unconsciousness. In such cases, weeks after the injury, headache, vertigo, loss of equilibrium, and defective

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hearing may develop. Fortunately, however, most fractures of the base of the skull show distinct clinical signs. If the fracture involves the anterior fossa, we have ecchymosis of the lower eyelid, bleeding from the nose or nasopharynx, and sometimes escape of the cerebrospinal fluid from the ear or nose, with or without unconsciousness. If the fracture is in the middle fossa, there is bleeding from the ear, with later buzzing and deafness, and, if the vestibular apparatus is involved, unsteady gait. Care must be taken not to overlook traumatic meningitis, for, if the clinical signs enumerated are accompanied by rise of temperature and pulse rate, and continuous fever, headache and interference with vision, meningitis must be absolutely considered. If, in addition, ptosis of the eyelid is present, or strabismus or nonreaction of the pupil to light, and mental cloudiness, with or without unconsciousness, meningitis is certain. If infection of the auditory canal already exists, such fractures can predispose to the formation of purulent meningitis, sinus thrombosis, or abscess of the brain.

Acute suppurative mastoiditis, either with or without septic meningitis, has been known to develop, following injury to the base of the skull, in persons who prior to injury suffered from a chronic otitis media. Pachymeningitis, a hyperplasia of tissue causing thickening of the dura mater and thus creating mechanical pressure, may permit the sufferer to return to work, but he will certainly complain of a single, constant symptom—a localized, dull, pressing headache. There is no other physical manifestation; yet, sometimes after months or years, epileptic seizures may occur, or a psychosis, or a complex resembling dementia precox or manic depressive insanity. It is matter of constant controversy in the medical profession whether such states can be a sequel of head injury, especially when there was no fracture, concussion, nor immediate disability.

The writer has come to the conclusion that "In such persons where a careful study of the past personal history presented evidence of an endocrine imbalance or emotional instability, the character of the injury and the subjective symptoms in the interval between the injury and the resultant psychosis, all point to the fact that the trauma to the skull must be looked upon as a precipitating or contributing factor in the development of the psychosis." Injuries to the skull, especially fractures with or without infection at the site of the injury, may be a primary or activating cause of brain abscesses, especially in the cortex. Abscesses may manifest themselves at once, or become incapsulated and not be evident for years.

Tumors of the brain may also be activated from injuries, but the trauma *per se* is never the primary cause. It produces only a *locus resistentiæ minoris* where dormant embryonic cells already exist. Such injuries may also be a contributing factor to the development of gumma of the brain in persons infected with syphilis. As to the place of brain injuries in affecting paresis, the writer believes that they are a contributing factor in precipitating a constitutional infection in a brain where resistance has been lowered by some trauma.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LA SALPÊTRIÈRE. Par Georges Guillain et P. Mathieu. Avec 38 Illustrations. Paris: Masson et Cie, 1925. Pp. 90.

ÉTUDES NEUROLOGIQUES. Deuxieme Série. Par Georges Guillain. Paris: Masson et Cie, 1925. Pp. 360.

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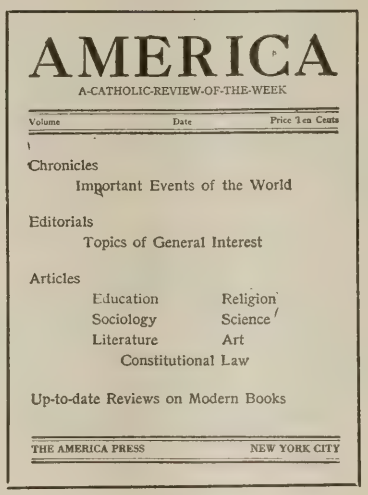
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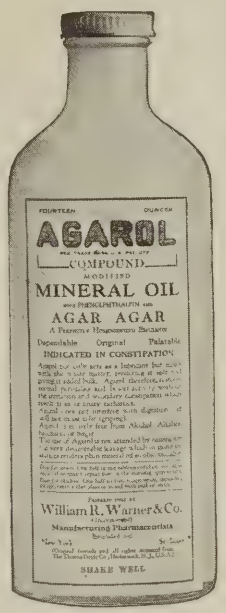

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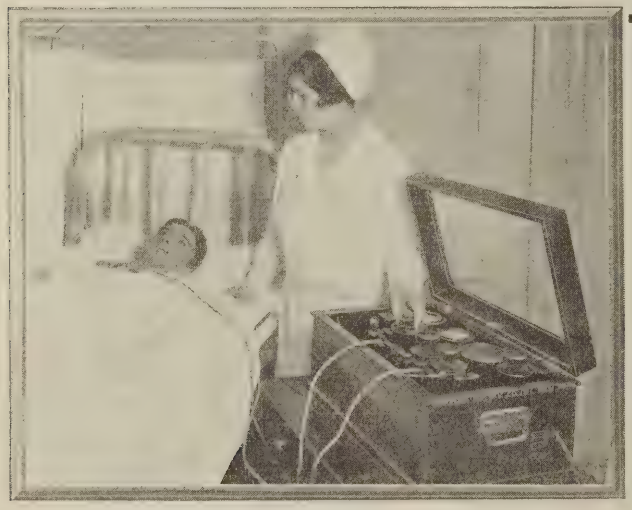

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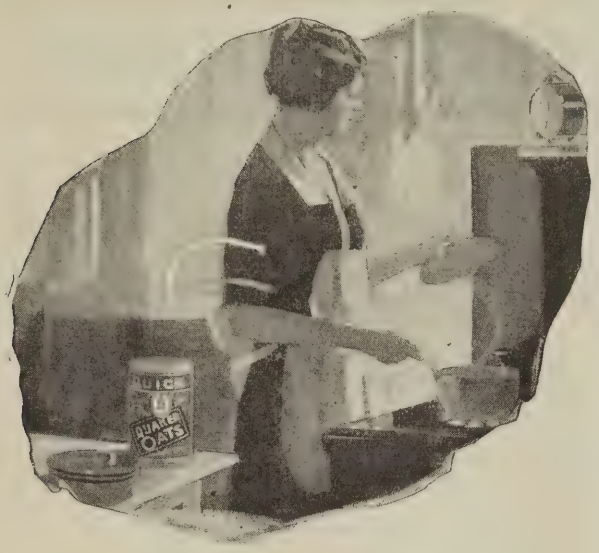

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Skimmed Milk (1% fat)	**9 fluidounces**
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This mixture contains 56.61 grams of carbohydrates, thus supplying material that is utilized rapidly for heat and energy. The predominating carbohydrate is MALTOSE, which has the highest point of assimilation of any of the sugars, is immediately available as fuel and may be safely given in comparatively large amounts. The daily intake of protein from the employment of this formula is 15.54 grams, an amount calculated to be sufficient to replace depleted tissues and to provide for new growth. There is present in the mixture 4.32 grams of salts for replenishing inorganic elements.

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Injectable Arsenical Tonic and Alterative

No Garlicky Odor on the Breath

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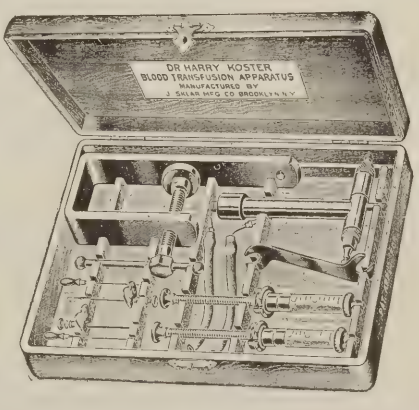

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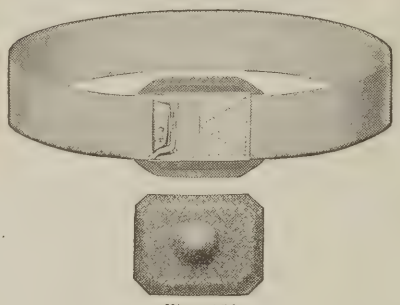

Fig. 150

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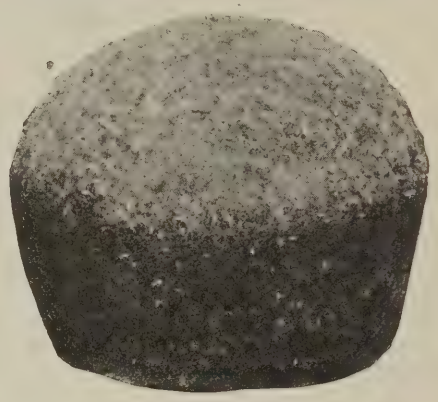

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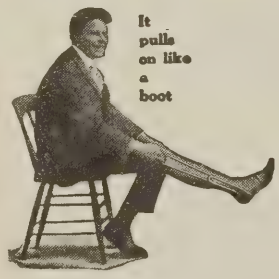

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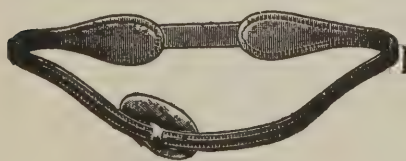
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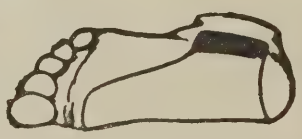

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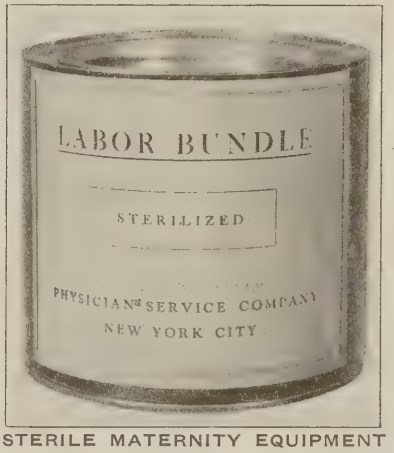

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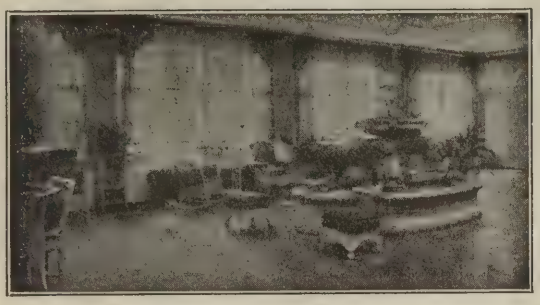

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